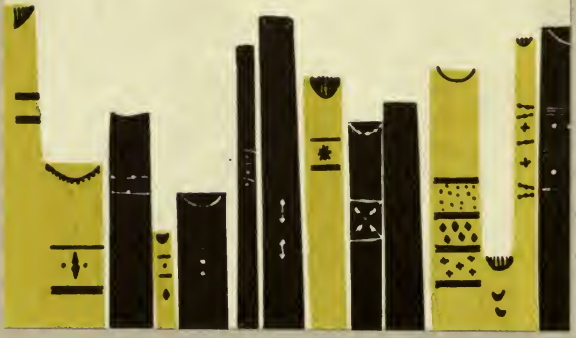
reference collection book

kansas city
public library
kansas city,
missouri



PUBLIC LIBRARY
KANSAS CITY
MO

From the collection of the

Prelinger Library

San Francisco, California
2007

PUBLIC LIBRARY
KANSAS CITY
MO

PUBLIC LIBRARY
KANSAS CITY
MO

PUBLIC LIBRARY
KANSAS CITY
MO

PUBLIC LIBRARY
KANSAS CITY
MO.

THE WISCONSIN ARCHEOLOGIST

727
Geol

AN OLD COPPER SITE? at PORT WASHINGTON 1
George I. Quimby

THE RADKE AREA OF THE RADKE-DUNHAM SITE, Steinbring and Farvour 5

LETTER, L. P. Jerrard 29

ESKIMO AT THE REIGH SITE? 30
Albert C. Spaulding

INTERESTING WISCONSIN SPECIMENS 32

THE COLLECTOR'S CORNER 33

SIX OLD COPPER IMPLEMENTS FROM LONG LAKE 35

KANSAS CITY, MO.
PUBLIC LIBRARY

APR 22 1957

YRANGLI CLIBIA

WISCONSIN ARCHEOLOGICAL SOCIETY

Milwaukee, Wisconsin

Incorporated, 1903

For the purpose of advancing the study and preservation of Wisconsin Indian Antiquities.

Meets every third Monday of the month at the Finney Neighborhood Library, Sherman and North Avenue, Milwaukee. (Except during July and August.)

OFFICERS

PRESIDENT

Kirk Whaley

VICE-PRESIDENTS

H. W. Cornell — Ellis Burcaw — Herman O. Zander

Laurence Kracht — Dr. D. A. Baerreis

DIRECTORS

Dr. R. E. Ritzenthaler — Kermit Freckmann

ADVISORY COUNCIL

Frank Achen
Wm. K. Andrew
H. S. Breitwish
Dr. E. G. Bruder
Edw. Eichenberger
W. E. Erdman
Patricia Ewen
Kermit Freckmann
William Godfrey
Robert L. Hall
M. F. Hulbert
Zida C. Ivey
A. E. Koerner
Mrs. Theo. Koerner
Dr. H. W. Kuhm
Robert Maher
W. C. McKern
Robert Menten
Louis Pierron
Arthur W. Quan
J. Ringeisen, Jr.
Chandler W. Rowe
Chas. G. Schoewe
Paul Scholz
Lincoln Smith
Albert Vidas
Dr. A. C. Whiteford
Warren Wittry

TREASURER

Arthur Niehoff, Milwaukee Public Museum, Milwaukee 3, Wis.

SECRETARY

Phil H. Wiegand, 1276 N. 63rd Ct., Wauwatosa 13, Wis.

EDITOR

Robert Ritzenthaler, Milwaukee Public Museum, Milwaukee 3, Wis.

MEMBERSHIP FEES

The Wisconsin Archeologist is distributed to members as part of their dues.

Life Members, $50.00 — **Endowment Members, $500.00**

Sustaining Members, $5.00 — **Annual Members, $2.00**

Institutional Members, $2.00

All communications in regard to the Wisconsin Archeological Society and contributions to the Wisconsin Archeologist should be addressed to Phil H. Wiegand, 1276 N. 63rd Ct., Wauwatosa 13, Wis. Entered as Second Class Matter at the Post Office at Lake Mills, Wisconsin under the Act of August 21, 1912. Office of Publication: 204 N. Main St., Lake Mills, Wis.

THE WISCONSIN ARCHEOLOGIST

Published Quarterly by The Wisconsin Archeological Society

New Series

MILWAUKEE, WISCONSIN, MARCH, 1957

AN OLD COPPER SITE? at PORT WASHINGTON

George I. Quimby

Chicago Natural History Museum

An unusual collection of thirty-two stone and copper artifacts in the Milwaukee Public Museum is of particular interest because of its possible connection with the Old Copper complex.

This collection was found in 1910, according to Milwaukee Public Museum records, in Ozaukee County, one half mile south of the Chicago and Northwestern railroad depot at Port Washington.

These artifacts were in a grave with one skeleton. The museum catalog aptly describes the situation as a skeleton accompanied by a cache. This grave or cache was about four to six feet beneath the surface in gravel.

The actual discovery of of the grave seems to have been made in May, 1910, by Roy Lutzen, Lloyd Jenkins, and Norman Henze, when the grave or cache was revealed by excavations for telegraph poles. The Milwaukee Public Museum obtained the collection (accession number 2758) by purchase from W. H. Elkey in July, 1911.

This collection contains the following artifacts:

1 copper celt 15 cm. long, shown in fig. 1, middle row, left.

1 copper blade or spearhead, leaf-shaped with flat tang. This blade or spearhead, 18.4 cm. long, is shown in fig. 1, top row, center.

2 chipped flint blades, leaf shaped with tangs, 26.5 cm. and 24.5 long, are shown in fig. 1, top row, left.

2 similar blades of chipped flint, 23.5 cm. and 17.1 cm. long, are shown in fig. 1, top row, right.

Figure 1

1 grooved ax of ground stone, not illustrated. [1]

7 elongated ovate knives or points of chipped quartzite, ranging in length from 9.4 cm. to 5.9 cm., are shown in fig. 1, middle row, right.

13 ovate knives, points, or scrapers of chipped flint ranging in length from 5 cm. to 3.9 cm., are illustrated in fig. 1, bottom row, left.

1 stemmed blade or point of chipped flint, 13.6 cm. long, is shown in fig 1, bottom row, right.

3 stemmed points of chipped flint, ranging in length from 7.1 cm. to 3.6 cm., are illustrated in fig. 2, left.

2 corner-notched points of chipped flint, ranging in length from 3.7 to 2.2 cm., are shown in fig. 2, right.

Typologically this whole assemblage seems to fit a generalized concept of the archaic period or culture type. Moreover, the presence of the tanged, leaf-shaped blade of copper suggests connections with the Old Copper complex.

Unfortunately the position of this style of copper knife in the Old Copper complex is not entirely clear. It has not been found in the Old Copper sites thus far excavated (Cf. Ritzenthaler 1946 and Ritzenthaler and Wittry 1952) nor was it specifically included in the categories established by Wittry (1951). Nevertheless such blades most probably are part of the Old Copper complex.

They have, for instance, been found associated with typical Old Copper blades in Michigan at two widely separated sites. Moreover, nine such points or blades in Chicago Natural History Museum's collection of Old Copper types exhibit the deep acid erosion characteristic of so many Old Copper specimens. All nine of these points are from the Old Copper area of eastern Wisconsin.

The regional and chronological variations of the Old Copper Complex are not yet known, thus it is impossible to make a positive assessment of the temporal position of the Port Washington find. There are, however, some interesting clues.

1. Although I have not seen this ax, the listing of it in Milwaukee Public Museum catalog occurred at a time when axes were being distinguished from celts, thus the very use of the term ax, implies the presence of a groove.

A number of Old Copper sites (two in Wisconsin and two in Michigan) and caches (one in Michigan and one or two in Ontario) plus a number of single finds are in locations that would have been under water during the time of glacial Lake Algonquin and of Lake Nipissing. This proves that such sites belong to a period that falls either between the end of Lake Algonquin and the beginning of Lake Nipissing or after the end of Lake Nipissing. In terms of radiocarbon dated geological events the first period would be from some time before 6000 B. C. to 2000 B. C. and the second period would be after about 1500 or 1000 B. C.

The earlier period seems most reasonable not only because of the radiocarbon dates of 3600 B. C. and 5500 B. C. for the Old Copper site at Oconto but also because Old Copper artifacts have been found underneath deposits of the Lake Nipissing stage in Lake Superior.

Unfortunately the levels of the vicinity of the Port Washington find, 620 feet to 700 feet above sea level (Port Washington Sheet, U. S. G. S., 1892) are above the water planes of both Lake Algonquin and Lake Nipissing south of their hinge lines, therefore the site can't be related definitely to the glacial and post glacial lake stages.

On the basis of the association of the tanged, leaf-shaped copper point with the Old Copper complex of pre-Nipissing times a date of 2500 B. C. or older for the Port Washington find does not now seem unreasonable.

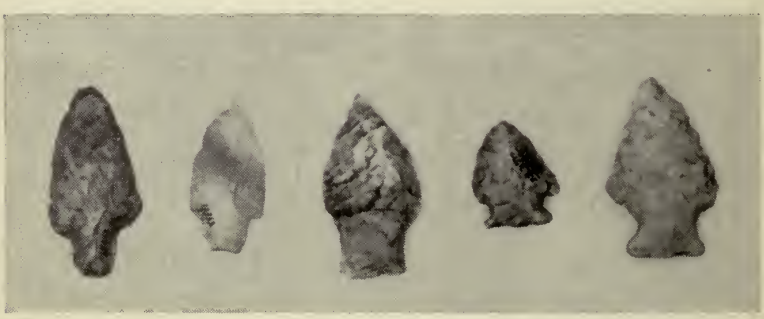


Figure 2

BIBLIOGRAPHY

RITZENTHALER, ROBERT E.
1946. The Osceola Site — An "Old Copper" Site Near Potosi, Wis. **The Wisconsin Archeologist,** vol. 27, no. 3, New Series, pp. 53-70.

RITZENTHALER, ROBERT E. and WITTRY, WARREN L.
1952. The Oconto Site — An Old Copper Manifestation. **The Wisconsin Archeologist,** vol. 33, no. 4, New Series, pp. 199-223.

WITTRY, WARREN L.
1951. A Preliminary Study of the Old Copper Complex. **The Wisconsin Archeologist,** vol. 32, no. 1, pp. 1-18.

THE RADKE AREA OF THE RADKE-DUNHAM SITE WINNEBAGO COUNTY

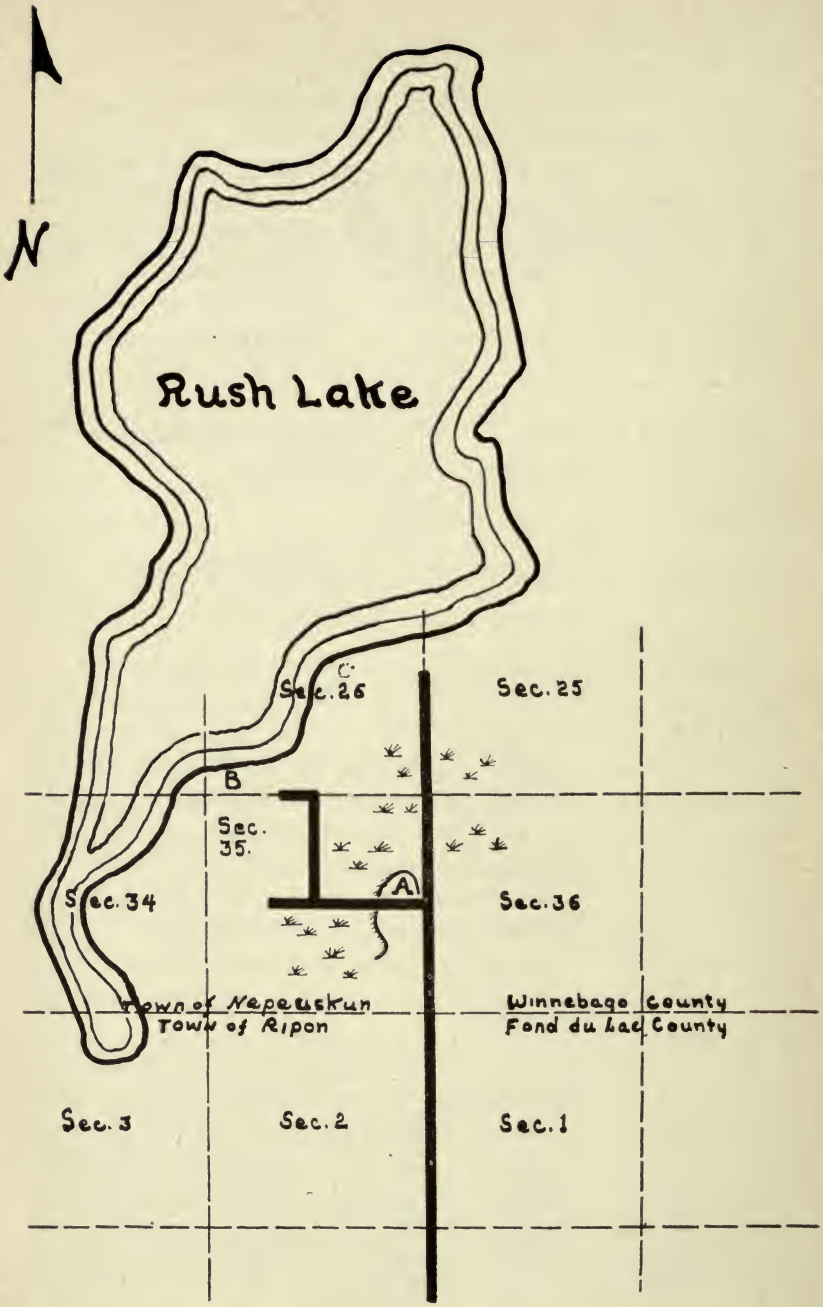
Part 1

John H. Steinbring and Franklin B. Farvour

Introductory Remarks

It was originally intended that the Radke-Dunham site be treated as complete unit. The late presence of crops, however, on the Dunham portion of the site has forced us to report only on the smaller north-lying area belonging to Mr. Edward Radke. Although a fair sized surface collection is already available from the Dunham part of the site it is thought that such material would be best accompanied in report by the results of proposed excavation. Such can not be accomplished until the crops have been harvested from Mr. Dunham's land. It is also hoped that excavation will reveal sub-surface deposits which were most unfortunately absent in the Radke portion of the site.

Acknowledgements for their kind cooperation and assistance is here gratefully accorded the following persons: Mr. Edward Radke, owner of the land considered in this report, for his generous permission of the excavation and surface recoveries undertaken; Mr. James E. Lundsted and his colleague Mr. Heinz Meyer for their technical assistance and willing labors under less than desirable weather conditions; Mr. Sam S. Olive, Local Manager of the North West Telephone Company office at Ripon, Wisconsin, for his keen interest and helpful efforts in the field; and Michael Radke, the High School



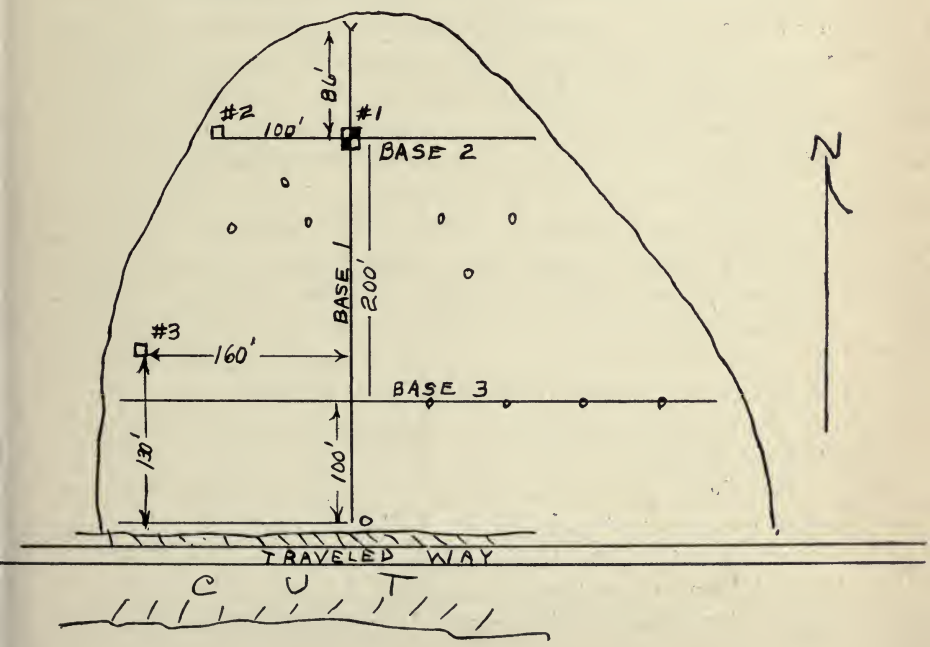
Location Map. No. 1.
Scale: 1½ inches equal 1 mile. Traced from 1909 Plat Map.
A—Radke part of Radke-Dunham site. B—Bier site. C—Koehler site.

student son of Mr. Edward Radke, whose studious interest in Archaeology assures one of his promising future.

Site Location and Description

The Radke part of the Radke-Dunham site (Winn 2) is located in the Southeast Quarter of the Northeast Quarter of Section 35, Town of Nepeuskun, Winnebago County, Wisconsin. It is situated on a 2½ acre projection of farm land which has the appearance of a one-time peninsula projecting into greater Rush Lake. The Dunham part of the site is merely a southerly continuation of this feature with an appreciable increase in elevation. The Radke portion is bounded by marsh on three sides whereas the Dunham area experiences this contact only on its west boundary where a rather steep slope descends directly to a large marshy expanse. The Radke area has been further separated for the convenience of this report by an East-West road which crosses the peninsula perpen-

Map #2
Radke. Area
Radke-Dunham Site



dicularly at its South boundary. This road serves also as the North boundary of the Dunham portion of the site.

The tiny jut of land thus described consists of a remnant of the Trenton escarpment, an Ordovician dolmite which, in these areas has succeeded in resisting erosion to an extent favorable to its marked surface expression intermittently for several miles. In the vicinity of the Radke-Dunham site the escarpment faces West and the dip slope descends gradually in a general Easterly direction. A two foot terrace of greater Rush Lake is visible at the base of the escarpment. The scarp face varies in height from about 30' at its southern limit of exposure to about 10' at the extreme North end of the Radke-Dunham site where the strata are no longer visible.

Although none have as yet been found in the immediate vicinity of the Radke-Dunham site, chert beds are not uncommon for the Trenton. At least one exploitable deposit has been discovered by the writer at a position on the present shore of Rush Lake approximately 1000 yards to the North. This outcrop occurs on the Koehler site (Winn-4) which is presently being excavated and will be reported on in a future issue. It is quite likely that implements found on the Radke-Dunham site were manufactured from chert occurring in local beds. A blue-gray well cemented shale resembling the Richmond (also an Ordovician deposition occurring directly below the Silurian Niagara) in color but not in consistency was also widely used in the Rush Lake area. As opposed to the so far known Richmond deposits this rock is quite hard, displays an irregular fracture and at times possesses a rather coarse grained texture. It, however, does not react to hydrocholoric acid and may be somewhat dolomitic in character. If it be correctly assigned to the Richmond formation its lack of calcium might be explained by a contact position with its Silurian successor in which the early precipitation of magnesium may have altered its composition.

The bluish gray sedimentary rock appears to have been a very popular material in the production of large chipped stone artifacts in the Rush Lake area. It is widely observed in such items as: rectanguloid knives, choppers, adzes, various types of scrapers, and occasional projectile points. Since it

does not occur West of Lake Winnebago, the presence of chipped stone items and fragments of this material in the Princeton and Berlin areas suggests an early contact for source rock. No evidence of glacial transportation has been observed.

Carefully detailed inquiries were made by the writers to determine the possibility and extent of previous archaeological activities on the Radke-Dunham site. No knowledge of excavation was discovered, but Mr. Harry Koehler, owner of the Koehler site 1000 yards North, indicated that he and others had obtained a sizeable collection of surface materials from the Dunham part of the site. To the best of our knowledge nothing had been previously obtained from the Radke portion of the site, either as finds while plowing or by a premeditated search. The only excavations in the area incorporating the Southeast quarter of Rush Lake known to the writers were undertaken by Thomas Armstrong of Ripon College in 1875. They do not affect the area of this report, but are of importance to other efforts presently underway, and may be found reported in the Smithsonian Report, 1879, pp. 335-339.

The Recovery of Materials

The materials recovered from the Radke site represent only those items lying on the surface or slightly beneath it. The excavation of several test pits was undertaken but no evidence of sub-surface deposit was discovered. Only a few unretouched flint chips were recovered by these efforts, and they appeared well above the plowline. One quartzite knife with a single side notch and a small concave base which had also apparently been used as a reaming instrument was obtained at the 6" level. No pot sherds were found during any of the digging although 4 were found upon the surface.

All of the materials which initiate this report were found confined to the 2½ acre land projection previously described. They were found rather widely scattered with the only marked concentration occurring in the area of test pit No. 1. Several side notched, plano-based flint or quartzite projectile points, and a larger jasper end scraper were among the items recovered from within a 50' radius of test pit No. 1. Two side notched, concave based projectile points were found in the

Southeast quarter of the field. All pot sherds were found upon the surface along the Western edge of the field where the escarpment descends to the marsh. These were all grit-tempered, cord roughened, and moderately thick. Only one poorly preserved rim sherd was found. These will be described later.

Geography, Terrain and Pit Location

After a general reconnaisance of the area to be explored the matter of recording the geography of the site was the first order of business for consideration. The area known by our terms as the Radke-Dunham site actually lies astride an East-West tertiary road that supposedly follows the East-West quarter line of Section 35. The portion of the area under consideration at this time lies to the North of the road and is much the smaller portion of the whole, as previously mentioned containing about 2½ acres. Although the parcel to the South of the road had been surveyed to the extent of delineating 40 acres of land no accurate line markers were available for reference. To bring survey data in from known points would have required extensive operation and consumption of time that just was not to be had. As a result it was decided to establish a purely arbitrary arrangement for our own use, or for the use of others who might wish to explore this same area. Our work is useful to others only, of course, if they have these notes to follow. The purpose of this work is to establish the location of the pits we dug and to set a North-South and East-West line from which to work

Per the accompanying sketch, note that the area is irregular in shape, having only one regular dimension, that being its South side, along the roadway. With this as a start a point was chosen at which a line roughly perpendicular to the road would exit the area at its furthermost projection to the North. We might note here that the East-West road is cut into the land surface between 3 and 4 feet for the West three to four hundred feet, and for the most part lies on solid rock. At the location chosen for a transit point the rock was exposed. Accordingly an "X" was chiseled ino the rock and marked with yellow crayon. The transit was set on this point and a compass north established. In this instance the use of magnetic

north is felt to be in order as (1) it is reasonably constant, and (2) no metallic accumulations exist anywhere in the area to disturb a reasonably accurate compass reading. As the transit point was between the traveled way and the top of the North slope of the road cut we set point zero at the top of the slope rather than at the transit point, thereby more accurately determining the actual size of the area under consideration. For the operation 30' intervals were marked along this North-South line (hereafter referred to as "Base 1"). The line was found to exit the field 386' North of the dead furrow delineating the limit of the worked land.

The greatest concentration of surface material having been found about 300' North of zero an East-West base line was established at 300' North (this line hereafter referred to as "Base 2"). Pit No. 1 was centered on the intersection of bases 1 and 2, staked 10' square. The 5' squares forming quadrants in the Northeast and Southwest were excavated. Pit No. 2 was established with its Southeast corner 100' West of the intersection of bases 1 and 2, pit No. 2 being two feet square. Another East-West base line was established 100' North of Zero, hereinafter referred to as Base 3. Pit No. 3 was dug with its Southeast corner 130' North and 160' West of zero. A line of minimum size test pits were dug at 60' intervals East of Base 1 along Base 3. Three minimum size tests pits were dug in the area bounded by Bases 1, 2 and 3 to the East of Base 1 and three to the West thereof. As none of these proved productive they were not accurately located, but lie approximately as shown on the accompanying field diagram.

The nearest point of known elevation being situated on the South side of Highway 44 some three miles South of the area being explored it was elected not to extend topographic survey to the area. Accordingly, lacking basis to work with, topography of the site was not surveyed as such. The area is, however, gently rolling, with its high point at the Southwest corner. At this point the work land is about 15' higher than the surrounding swamp. Progressing Northeasterly and Easterly to the point where Base 1 exits the area the elevation falls off five to eight feet. Continuing Easterly and Southeasterly the land falls off practically to swamp level, where it

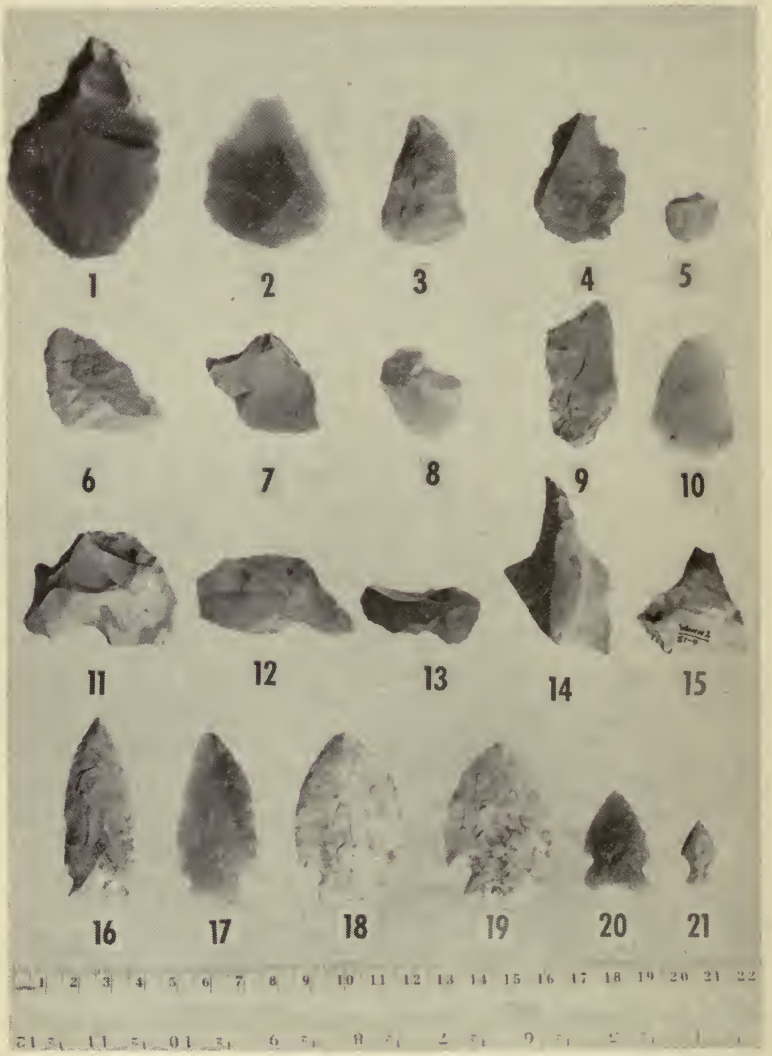


Fig. 1. Chipped stone artifacts from the Radke portion of the Radke-Dunham site, Winnebago County. 1-5, end scrapers; 6-8, flake scrapers; 9-10, alternate beveled scrapers, spokeshaves on flake and end scrapers; 14-15, gravers; 16-21, projectile points.

stands when the East line reaches the road. Along the South line of the parcel (the North line of the road) the land forms a slight positive vertical curve in its return to the high point previously mentioned. Across the road to the South the land continues on the same trend, rising as it continues to the Southwest and falling off generally in a Northeasterly direction. This falling off is in a generally negative vertical curve, forming a slight bowl shaped terrain feature. The low point of the South portion of the site is at the intersection of the East-West road and a heretofore not mentioned North-South secondary road approximately along the East line of Section 35.

It might appear that in spite of the scientific potentialities present that the same were not exploited to the fullest degree. and this might perhaps be the case. However it was not by error of omission that this came to be, but by considered choice. Although this exploration was carried out at a time when good weather should be expected, the elements treated us most unkindly. A succession of violent snow showers continued throughout the morning creating great discomfort and generally making a mess of things. Field notes became smudged and snow even accumulated in the lens shade of the transit! Under these conditions even doing the digging was bad enough, to say nothing of attempting to be profoundly exact with the work. Hence elegance gave way to production of the more basic information, with the thought that should developments warrant it, greater detail in geographic and topographical information could always be secured.

Chipped Stone Classifications

I. Projectile Points

Seven of the 14 whole or determinable points are of the **side-notched** variety (plate 1). Of these the two smallest ones have concave bases, and one is broken on a line between the notches making it impossible to determine its base form. Three basal fragments also appear to represent this style. Of the 10 projectile points thus representing the side-notched type 6 are of quartzite and 4 are of flint or chert. Of the 6 quartzite points 3 are manufactured of identical material. This is a pink quartzite with abundant ferriginous impurities giving those zones affected a dark red-brown color. Other artifacts chipped

from this source rock include a plano-based lanceolate point with a large flake removed from one side, an end scraper, and a round knife fragment. Only two of the quartzite side notched forms display basal grinding. One of these has a concave base, the other is straight based. One of the three remaining points in this category is crudely effected from a poor grade of brittle, ill-fractured chert with an apparent disregard for impurities and irregular cleavages. Consequently the upper facial portion of the body has been shattered either in the process of manufacture or by later contact breakage. It is straight based.

Another projectile point of this style may perhaps best be placed in a different category. The apparent expansion of the side notches to meet the basal corners gives this artifact the appearance of an **expanding stem** (No. 16, Plate 1). It is straight based and might also be described as diagonally notched. Its lanceolate blade and seeming similarity to the other straight based forms have, however, suggested its typological relationship to the present category. It is of hard, gray flint and the suspicion of basal grinding can be advanced.

The remaining artifact of this style is represented only by a substantial portion of the base. It is made from a white chert with orange impurities. A single conchoidal spall has been removed from the center of the otherwise straight base. It is larger in width than those previously considered, even though the extreme portion of one side has been broken off. A reconstruction on the basis of the other forms would reveal a blade much exceeding them in length.

A second category of projectile points is represented by only one item. This is a complete **unnotched straight based** form made from the pink quartzite already mentioned. Were it not for the fact that this form has been described as a projectile point, it would have here been included among the knives. It bears a distinct typological similarity to a knife manufactured from an orange-white chert (Nos. 8 & 9, Plate 2). Both of these blades have had flakes removed from a single face in such a way as to give a "bent" effect. They are unlike in that the quartzite implement required one or two large flakes to be removed whereas the larger chert item

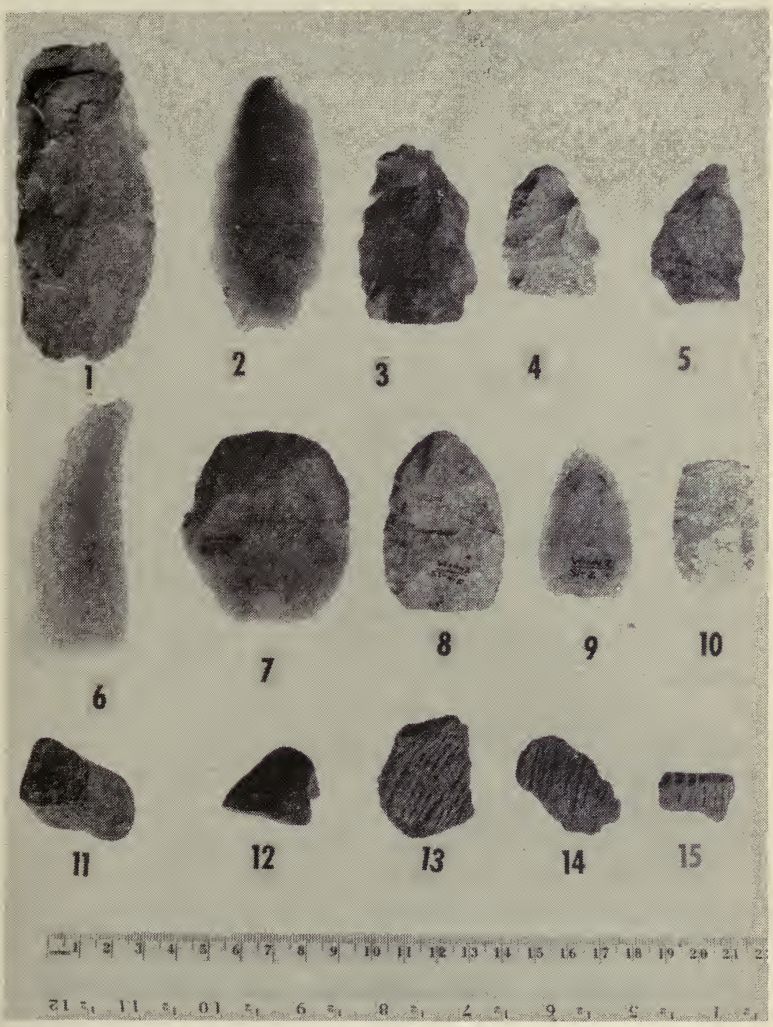


Fig. 2. Miscellaneous items from Radke portion Radke-Dunham site Winn-2. 1-5, knives; 6, side scraper; 7, round scraper; 8-10, knives or blades; 11-12, hematite, metallic and sedimentary respectively; 13-14, body sherds; 15, rim sherd.

was rather extensively chipped to give a similar appearance. The chipping on the concave face of the chert blade was also primarily executed, whereas secondary flakes were removed from an already finished surface of the quartzite item. This apparent effort to alter an original surface would make a poet think of fluting. Four fifths of the blade has been so treated, and no evidence of basal grinding can be observed.

The "bent" aspect of these blades finds a fairly abundant duplication in the surface collections from the Southeast quarter of the Rush Lake area. Subsequent acquisition of further outlying collections may reveal an even broader representation.

Next among the projectile points are two ovoid diagonally notched forms of chert (Nos. 18 & 19, Plate 1). The bases are slightly convex and have unquestionably been ground smooth. Except for an irregularity resulting from a patina on a face of one, they are very well made, showing delicate pressure flaking around all edges except the base. Mineralogically the more perfect of the two deserves note. Its white ground mass is heterogeneously speckled with clear quartz nodes, orange areas, and a black ferrous impurity which all combines to give it a mottled and distinctive appearance. (This point would make an exceptionally fine beer ad.) The material used in the manufacture of this projectile point is also represented in an irregular core. A hasty examination of chert occurring in the Trenton beds at the Koehler site strongly suggests that the material used was obtained from native sources.

A core very similar in form to the one just mentioned, but of different material was also recovered at the Radke site. It is of a homogeneous, white to gray quartzite with tiny ferrous impurities. It is fairly coarse grained and is very similar to materials used by the occupants of the Havey site. (DA-13, Nero, Wisconsin Archeologist, Vol. 36, No. 4, Dec. '55).

Noteworthy among the projectile points is found a miniature form with a **flaring stem** (No. 21, Plate 1). This effect was achieved by the exaggerated side notching of the point. The flint knapper applied his art to an otherwise flat dorsal plane and permitted the original smooth flake surface to remain unmarked upon the ventral face of the point. The basal

area is convex, the material is a gray flint of good quality, and the point is 20 mm. in length. The larger relative of this tiny artifact is found widely represented throughout the Rush Lake collections so far observed.

A triangular point is also present. It is manufactured of glassy whitish quartzite with black and brown impurities. It is isosceles in outline and the ascending sides have been delicately pressure flaked. Two adjacent conchoidal spalls have been removed from the basal edge on one face. The wide range of quartzitic components, and the small indistinctive specimen (17.2 mm. from base to vertex) render it undesirable to consider its mineralogical source. This type of point is found abundantly in Mississippian horizons and is generally considered rather late in time. Its presence, however, in very early sites (par ex. Denhigh, and Reagan) and its simplicity of design might cause one to speculate upon its more universal temporal and areal appearance by separate invention.

A broken lanceolate blade of white and blue-gray banded chert may be a knife but its blunt or pointed forward terminus is not present. It is quite thin and is well chipped, being in part pressure flaked.

Among the 8 remaining poorly executed or fragmentary items belonging in the projectile point classification only one will receive mention here. It represents only the lower corner portion of what appears to be an eared form. The material

1.3 actual size

Fig. 1. Basal fragment of eared and possibly fluted point.

involved is a white homogeneous glassy flint, very hard in composition. One could speculate that the unceremonious detachment of this fragment from the remainder of the artifact may have been effected by the removal of a longitudinal flute. An examination of the accompanying drawing may serve to form the reader's own opinion (Fig. 1). (By turning the page upside down this item may take the appearance of an abbreviated forward element of a blade or point. From the position drawn, however, the lateral orientation of the flaking, and the seeming development of a concavity at the base cause the writer to include its consideration as a broken eared form.)

II. Scrapers and Combined Implements

Of the several types of scrapers represented the most numerous, and, perhaps, significant, is the **flake scraper.** (Nos. 6 - 8, Plate 1) There are 40 of these varying in length from 20.5 mm. to 50 mm. A hard gray flint seems most popular in their manufacture, there also being a hard white flint, several vari-colored cherts, and one specimen of pink quartzite. Many of them show careful retouching on more than one edge. A large triangular flake, for example, displays retouching on each side. This specimen is duplicated in surface collections at the Koehler Site. There are also 36 unprepared flake scrapers which exhibit only work scars.

Of particular interest in regard to the flake scraper category is the appearance of **spokeshaves** (or concave scrapers) (Nos. 11-13, Plate No. 1) and **graver-like projections** (Nos. 14-15, Plate No. 1) These occur both separately and in combination with scraping edges. The graver-like tips do not, however, appear to occur intentionally with the spokeshave on a single flake. The spokeshave which may have been used in some cases as a shaft smoother, ranges in size from 2 mm. to 14 mm. in the largest and most perfectly executed specimen.

Although the flake scraper compares very favorably in size and general manufacture to the types described by Nero for the Havey Site (Wis. Arch., Dec. 1955), the graver (except for one specimen which is identical in style) varies considerably. They would appear to be greatly exaggerated in length

and are much broader at the base, the largest specimen being 23 mm long and 13 mm in width at the base. Its maximum thickness is 5 mm. Others are much shorter and have a rounded outline. Two of the 5 graver like objects which can be spoken of with conviction have each 2 points (No. 15, Plate No. 1) Multiple specimens were also reported for the Havey Site. A personal examination of the Havey Site materials (a privilege accorded me by the very kind services of Mr. Warren Wittry and his charming assistant Miss Joan Freeman) invites a conclusion of close similarity between those items and the Radke materials. This similarity seems most especially observed in the flake scraper category and in the double pointed graver.

Several items which may be the remains of scrapers possessing broken gravers were also obtained, but, because of their questionable nature, are not being here included. One scraper seems to have been effected from an uncompleted projectile point, all of its sides being flaked down from a single face to produce scraping edges.

A **snub-nosed scraper-graver** (No. 10, Plate No. 4) is present but is slightly broken. Implements of this sort have been found in Dinwiddie County, Virginia, the Bull Brook Site near Ipswitch, Mass., the Shoop Site in Pennsylvania, and are not unlike objects recovered at the Lindenmier site in Colorado. Its occurrence in these inventories has made it a more or less exclusive Paleo-Indian trait. The specimen obtained at the Radke site is 22 mm. wide and 5 mm. thick.

End Scrapers (Nos. 1 - 5, Plate No. 1) are also found in the Radke collection. Among the five good examples is a rather large specimen made from a caramel colored jasper with a distinctly chalcedenous composition at the upper end. It is exceptionally well made being carefully pressure flaked around its entire perimeter. Its upper portion seems to have been reduced in size so as to permit insertion into a handle. It is 62.5 mm. long, 40 mm. wide, and 12.5 mm. in maximum thickness (this occurring nearer its upper end). A pink quartzite end scraper is somewhat smaller in size (41 x 38 x 8 mm.) having its maximum thickness only 10 mm from the bight (the jasper specimen was thickest 32 mm from the upper end). A very

small end scraper is also present. It is 15 mm long, 16 mm wide and 6 mm thick. The thickness is greatest at its upper end, but this may be the result of its having experienced breakage at that position. It displays delicate flaking and it is made from a gray, hard, homogeneous flint.

One end scraper must be especially mentioned for its possession of a spokeshave upon one side (No. 13, Plate No. 1). This specimen is again of a hard gray flint and is much longer in proportion to its narrow width than the others considered. (36 x 17 x 9.5 mm). Only its working end and one half of the side possessing the spokeshave display careful flaking. Its maximum thickness is nearer the working end.

An end scraper of a somewhat different character is also observed. It has been chipped on both the "dorsal" and "ventral" surfaces and is more or less triangular in outline (No. 3, Plate No. 1). It is concave upon its lower surface and is tapered toward its upper end as was the jasper specimen, suggestive of its insertion into a handle. The inclination of the bight is more marked than those previously described and is at an angle of approximately 55 degrees. It is made of a hard orange and gray flint and is 40 mm x 26 mm x 8.5 mm in dimension. It is thickest near the bight.

One well made representative of the end scraper remains. Both surfaces are smooth and unflaked, only the edges showing a careful chipping. (No. 4, Plate No. 1). The best application of this appears upon the bight itself which is at a 90 degree angle. The maximum thickness is at its upper end but this seems to be the result of an irregular fracture in the hard, gray and brown, mottled flint. Its dimensions are 38 x 28 x 7.5 mm.

A single item represents the **round** type scraper (No. 7,Plate No. 2). This has been made from a yellowish gray, coarse grained quartzite. The overall flaking is rather crude but some positions upon its periphery exhibit careful retouching. The angle of bight is approximately 30 degrees at its best positions. It is 60 x 53 x 9 mm.

A side scraper of yellow quartzite deserves note (No. 6, Plate No. 2). It was worked from a long triangular flake. One side was left smooth, apparently for purchase, and one

side was chipped down from a single surface to provide a very effective working edge. It is 82 mm long, 33 mm wide and 7.5 mm in thickness.

Five scrapers might be described as **retouched core scrapers.** These are all quite irregular in general shape but possess well made working edges. They range in thickness from 4 to 11 mm, the smallest being represented only by a fragment.

A large **double edge side scraper** of grayish pink quartzite is also to be observed. It has been broken in such a way that its length can not be determined, but it would appear that the fracture occurred near its mid point. It is 50 mm long, 47 mm wide and 6.5 mm thick.

Two **alternate beveled side scrapers** (Nos. 9-10, Plate No. 1), one of rose colored chert and one of pink quartzite, deserve attention. The sides of these have been worked down from opposite surfaces. One side of the quartzite implement, however, shows longtitudinal flaking. The chert item has only a small working edge on one side but demonstrates flaking perpendicular to the long axis on both sides.

Eight other scraping implements will receive only cursory attention here. They include a side scraper of pearly, mottled gray flint, two end scrapers (one of clear quartzite and one of flint), four undeterminable fragments and a long irregular spall containing a single scraping side. The last mentioned is too thick for the flake scraper category, and tends, except for its narrow construction, to be closer to the core scraper description.

One large blue scraper completes the list. It is somewhat eroded and was made from a large flake. It is 61 mm x 69 mm x 13 mm and two opposite sides have been flaked from the dorsal surface.

III. Knives and Blades

A large **rectangular** blue shale knife (No. 1, Plate No. 2) characteristic of other Rush Lake collections is present here. It is 98 mm long, 42 mm wide, and has a maximum thickness of 16 mm. One surface is slightly weathered but its large crude chipping is easily discernible from either plane. A small concavity seems to have been intentionally effected at both

ends, being worked from both surfaces at one end and from only one at the other.

The blue shale was also utilized in the manufacture of two large knives more lanceolate in design, and in a single edged knife or side scraper which has experienced erosion too excessive for perfect identification. The large crudely effected knives average 70 x 50 x 16 mm in dimension, they being very nearly alike in size although one is slightly broken. The single edged knife is 64 x 24 x 10 mm.

A pretty red quartzite knife (No. 2, Plate No. 2), lanceolate in outline and possessing a single side notch was procured from the 6 inch level while digging pit No. 3. It is triangular in cross section and displays a marked "keel". Its forward end seems to have been used for reaming. It is blunted and slightly broken. The base of this knife is concave and shows flaking on the face opposite the keel. It is 80 mm long, 35 mm wide at its center of balance (just to the rear of its actual mid-point), and is uniformly 9 mm in thickness. This is an exceptionally well made article, having pressure flaked edges, and is reminiscent of very early traditions in which its source rock seems also to be duplicated. (This, however, would demand further and careful study.) The flaking, barring interruption by the keel and some small irregularities, is generally horizontal and parallel.

A very crude gray flint knife is present. This item generally resembles two smaller but better made specimens. It is lanceolate and unnotched. Its dimensions are 51 x 36 x 12 mm. The two smaller ones appear to have been hafted, the bases being slightly indented by the removal of a few small flakes. No particularly careful work is in evidence, but the two items are almost identical in size. One is of gray chert 42.5 x 29.5 x 8.5 mm. the other is of white to pink, grainy chert 40 x 30 x 9 mm.

The "bent" knife previously described should be here included. It is ovate and measures 55.5 mm in length, 37 mm in width and 8 mm in thickness.

Several fragments are also present. One of the pink quartzite represents a knife. It was approximately 42 mm in diameter and 7.1 mm thick. A round knife of grayish white, and pink, mottled chert is also observed. Two irregular frag-

ments of knives are represented in the blue shale and white coarse grained quartzite. They are undeterminable. A hard grayish white flint is represented by two basal portions of rectanguloid knives. One is narrow (24 mm) and the other is 42 mm in width. The forward end of a gray flint blade is lanceolate in character and its maximum width was probably 29 mm. A small poorly made white and orange flint blade which is ovate in outline may have been an uncompleted projectile point. Its dimensions are 33 x 21.5 x 11.5 mm.

IV. Chipped Discs

These items may have served as knives, and/or scrapers, but (with one exception) they bear no evidence of such use. They range in diameter from 24 to 33 mm and in thickness from 4.5 to 10 mm. There are six such items, all manufactured from flint or chert.

V. Miscellaneous Chipped Stone and Other

An assortment of six longitudinal cores having work scars and some side or edge flaking appear in the surface collection. They are from 37 to 64 mm in length and from 9 to 16 mm in thickness. They are either rectangular (3) or triangular (3) in cross section. Were it not for the fact that very little design in these objects can be detected, they would resemble burins.

Two pieces of hematite were recovered (Nos. 11-12, Plate No. 2), one heavy and metallic in a crystal form, the other light and sedimentary. The latter one has a large rubbed surface.

The remaining items are 3 body sherds, one rim sherd (Nos. 13-15, Plate No. 2), and a smooth ground stone bearing numerous scars, which may have served as a whet-stone. Two of the body sherds are 10 mm in thickness, the other is only a fragment of the exterior surface and cannot be gauged. All are cord roughened and grit tempered although a very small proportion of aplastic material appears to have been incorporated. The rim sherd possesses cord marks which cross the rim from the exterior toward the interior where they terminate at the edge of a smooth descending bevel. The angle of the bevel is approximately 45 degrees from the horizontal. Although very little is present, the rim appears to be otherwise

straight. This style is duplicated in an appreciable ceramic collection from the Koehler site. Woodland pottery of heavy construction enjoys a fair popularity at that site. Although four pot sherds present no favorable grounds for comparison the aplastic to plastic proportion seems much greater at the Koehler site.

Conclusions

That magic word! Alas, the faintness of the occupational evidence and the diversity of things assembled demand something less than universal speculation. Only with caution can the few following observations be made without trembling too perceptibly.

Since no sub-surface deposit was encountered during the excavation it can be advanced that the peoples in question (be there one or more occupations at one or various times) were only briefly installed on the premises. Scrapers, knives, and projectile points being most favored in the cultural equipment obtained, the occupants were very likely the members of seasonal hunting parties, camping on what may in times past have been the shore of a much greater Rush Lake. Flakes and cores further indicate that, at times, the occupants manufactured the tools of their trade on the spot. Fire broken rocks (but no hearths) suggest too that cooking and warming fires were maintained.

The side notched concave based projectile point, a possible "eared" form, graver-like objects, spokeshaves, basal grinding, end scrapers, and numerous retouched flakes are among the items that strongly suggest a relationship to the occupants of the Havey sie. The occurence of hematite, both in metallic and surface rubbed form, and longitudinally flaked and polyhedral core implements also aid in such an identification. The absence of the snub nosed scraper-graver at the Havey site may merely reflect a difference in the investigators' fortunes. This item, characteristic of Paleo-Indian occupations in the Eastern United States, would seem more comfortably positioned in the Havey site inventory which shows stronger ties to such sites.

The difference in the form of the graver and the less well made complement of bodied scrapers at the Radke site may

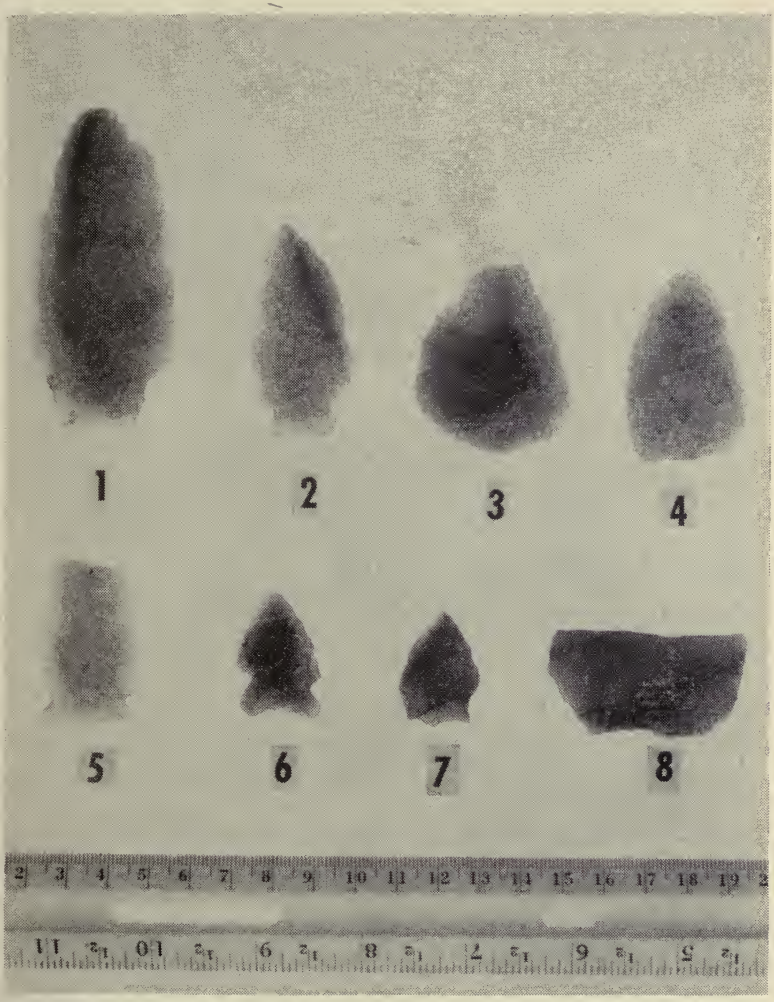


Fig. 3. Implements of identical quartzite, Radke portion of the Radke-Dunham site. 1, knife with reaming end; 2, projectile point; 3, end scraper; 4, blade or projectile point; 5-6, projectile points; 7, scraper fragment; 8, fragment of "round" knife.

show modification by time and contact. The red quartzite lanceolate knife may reflect the presence of an even earlier occupation, recovered, perhaps, by later peoples and re-used as a reaming tool—their own culture having no requirements for a blade of its description. Even perhaps more significant

would be its position in the range of artifacts made from an identical type of quartzite (Plate 3). If it or any of the items occurring in this range be earlier than others (be they knives, scrapers, or projectile points) as distinguished by style or flaking technique, the **knowledge of the source** could be considered a **trait** representing both culture and temporal span. Such, of course, would treat as minimal the use of abandoned cores by later occupants, and (since no such evidence is present) the transportation of source rock by glaciation could be disregarded. In fact, the color, hardness, and general composition so resembles the Huronian quartzite of the Baraboo Range that such an identification seems tentatively permissable.

The diagonally notched broad ovoid projectile points which exhibit such marked basal grinding are Hopewellian in style. Yet, basal grinding has been widely accepted as more or less exclusive for Paleo-Indian and Archaic complexes. Thus the combination of base treatment and point form may reflect a persistent tradition finding itself still expressed in the implements of a much later population. A peripheral survival mingling with a more highly developed culture could also be observed as a possible explanation. Here, however, the itinerant character of the occupants, and the unimpressive proportion of the traits of the more highly developed culture would render the last named position the less favorable one.

In view of the material from other nearby sites and the Dunham portion of the Radke-Dunham site which has rewarded us with one fluted point (No. 1, Plate 4) it can be advanced that early peoples having traits in common with Paleo-Indian occupations of the Eastern United States first occupied the Radke-Dunham site. This observation exceeds speculation in its soundness by the traits already mentioned and the similarity to the Havey site materials which more effectively reflect such influences. Rumblings of an Archaic occupation or a deteriorating Paleo-Indian at its original arrival may be detected in the lack of uniformity in the end scraper, the modification of the graver, and the proximity to Archaic implements manufactured from identical source material. These

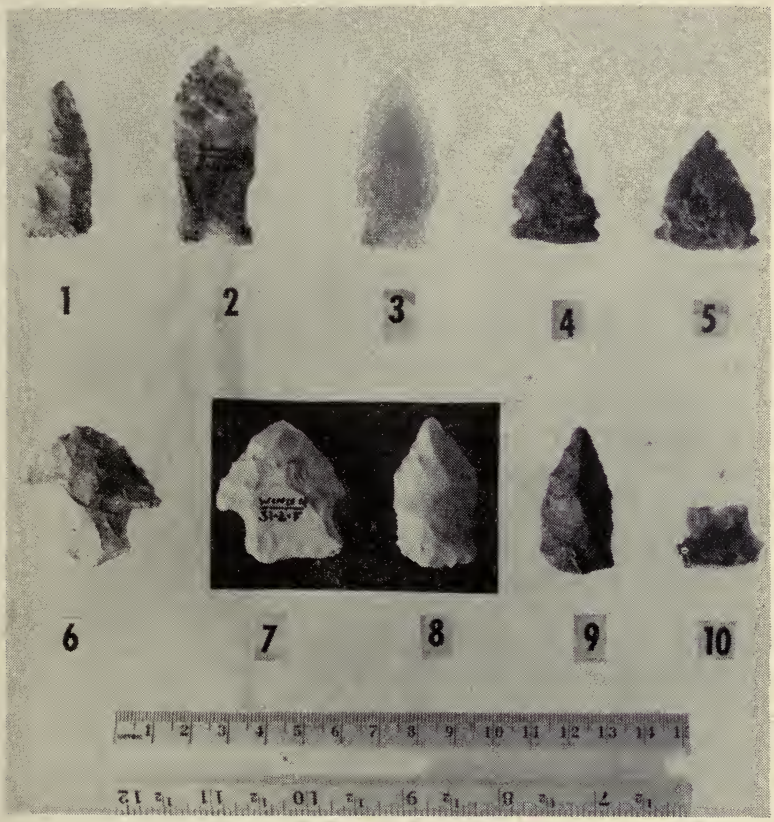


Fig. 4. Paleo-Indian and Archaic influences in the Rush Lake area. 1, fluted point from Dunham portion of the Radke-Dunham site; 2-3, early styles at the Koehler site; 4-5, points reminiscent of the Brewerton Focus of the Laurentian Aspect in New York state found at the Koehler site; 6-7, early points, Koehler site; 8-9, unfluted pentagonal points from the Koehler site which are similar to items found at the Reagan site and in Dinwiddie County, Virginia where they are suspected of considerable antiquity; 10, snub-nosed scraper-graver from the Radke part of the Radke-Dunham site. The last named item has been found in Paleo-Indian inventories at the Bull Brook site, Ipswich, Mass., the Shoop site, Pa., and in Dinwiddie County, Virginia.

were followed intermittently by other and various wandering hunters who sought to profit by the ecological advantages of the Radke-Dunham peninsula. Its position on a shallow glacial lake, rank in waterfowl forage and in game animal cover was

very probably an attraction of considerable power. They have all left clues to their identity but, tres malheureux, not in sufficient abundance for a convincing identification.

A future report on the Dunham area of the Radke-Dunham site will provide stronger evidence for the establishment of cultural sequence in the vicinity of that site. An analysis of the abundant surface materials (approximately 2000 items) of the Koehler site which more liberally represents Paleo-Indian and Archaic traits of the Eastern United States, and features excavated at the Bier sie (Winn-3) will serve to further acquaint the reader with an aboriginal center of no mean proportions. (Early projectile point forms from the Koehler site with some identifications can be observed on Plate No. 4.)

It is believed by the writers, with the firm strength of conviction, that further excavation and surface recovery in the Rush Lake area will produce information of significance to the Archaeology of the Mid-Western United States.

Artifact List

Projectile points	14
Undeterminable point fragments	8
Side scrapers	7
End scrapers (including 5 core scrapers)	15
Flake scrapers	40
Round scrapers	1
Unprepared flake scrapers	36
Undeterminable scraper fragments	5
Knives	14
Spoke shaves	5
Chipped discs	6
Gravers *	8
Longitudinal core items	6
Pieces of hematite	2
Potsherds	4
Whetstones	1
Undeterminable artifact fragments	3
Total	185

* Includes snubnose and variants

BIBLIOGRAPHY

GRIFFIN, J. B. (Edit)
1952. Archaeology of the Eastern United States. University of Chicago Press.
NERO, ROBERT
1955. Surface Indications of a Possible Early Archaic Campsite in Wisconsin. **The Wisconsin Archeologist,** Vol. 36, No. 4.
RITCHIE, W. A.
1944. The Pre-Iroquoian Occupations of New York State. Rochester Museum of Arts and Sciences.

———————

Nov. 20, 1956

Dr. George I. J. Dixon,
Wisconsin State College,
Stevens Point, Wisconsin.

Dear Dr. Dixon:

I have read the account by you and your associates, in the September, 1956 issue of the Wisconsin Archeologist, of mounds near Plover, Wisconsin, and find it interesting but I am critical of your description of the location of the mounds and the map you have provided.

The mounds are located in "Section 21 of Plover Township." Plover Township is a political subdivision and not a survey township. It so happens that there is only one section 21 in Plover Township but 24 other sections appear twice and section 1, three times in that town. The correct description is, Section 21, Township 23 North, Range 8 East. This has been going on for years and there are hundreds of similar inaccurate descriptions in old records of the Wisconsin Archeologist. Many do not have a further identification such as the East bank of the Wisconsin River, but it has been common to state that the feature is on John Whoosit's farm.

When one takes the trouble to map a group of mounds I think a record should be made from which the position of the mounds can be located even if they are obliterated. You say that mound L lies 50 feet from the river bank. If mound H, 286 feet long is drawn to scale, it looks more like 200 feet than 50 feet.

River banks slowly wash away, railroads are too torn up, highways are relocated and farm ownerships change. A survey should be tied to the government land survey lines. Points

to be recorded can be located with reference to lines drawn parallel to the land survey lines. This can be done with simple equipment, a 100 foot tape and some poles for sighting. I am enclosing a sketch showing the way I think such a job should be done.

I don't want to be unduly critical. I just want to encourage what I think is a better pracice so I am sending a copy of this letter to the editor of the Wisconsin Archeologist. I have been exasperated by the records made 40 or 50 years ago and I would like to see your record made so that 40 years hence, it will be usable.

Sincerely,

L. P. Jerrard,
522 Willow Rd.
Winnetka, Ill.

ESKIMO AT THE REIGH SITE?

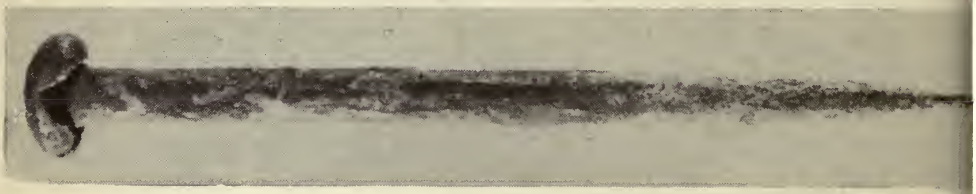
Albert C. Spaulding

Described and pictured in the March, 1956 issue of the Wisconsin Archeologist is an unusual artifact found by Ostberg at the Reigh Site. Both its material and use have been a mystery. From the illustration (Fig. 1) a rather provocative iden-

tification as to use was offered by Mr. Wendell Oswalt, student of anthropology at the University of Michigan, and a specialist in Eskimo culture. His opinion is that it is a line connector such as was in use by the historic Eskimo. Somewhat similar, although not identical, objects are illustrated in Plate LVI of Nelson's The Eskimo About Bering Strait (B. A. E. Ann. Rep. No. 18) and called "cord attachers."

Figure 1

Interesting Wisconsin Specimens



COPPER PUNCH

Found at Butte de Mort, Winnebago County. From the Overton Collection.

COPPER FISHHOOK

With fragments of fiber line preserved. Wisconsin. Devroy Collection.

THE WISCONSIN ARCHEOLOGICAL SOCIETY has scheduled its annual meeting to coincide with the meetings of the SOCIETY FOR AMERICAN ARCHEOLOGY to be held in Madison, May 2-4. You are invited to attend the Thursday, Friday, and Saturday morning sessions of the SAA to hear papers given by professional archeologists. On Saturday the Wisconsin Archeological Society will hold a noon luncheon to be followed by an afternoon session which will include the showing of a new movie on Wisconsin archeology (prepared by the Milwaukee Public Museum) and talks by members. If you wish to read a paper or give a talk please send title or copy of paper to your editor (R. Ritzenthaler, Public Museum, Milwaukee 3) by April 15th.

Back issues of THE WISCONSIN ARCHEOLOGIST are offered for sale by Howard Van Ness, 413 Seminary St., Lodi, Wisconsin, as follows:

Old Series — Complete
New Series — Complete through Vol. 34
Also Vol. 35: 1, 2, 3
36: 3, 4
Index.

The following NEW MEMBERS are welcomed into the Society:

Barka, Norman F., 2061 Kedzie Ave., Chicago 47, Illinois.
Bindrich, James, 2929 N. 45th St., Milwaukee, Wisconsin.
Dickson, Marion H., Lewiston, Illinois
Dunn, Walter S., Curator, State Historical Museum, 816 State St., Madison, Wis.
Jensen, Wilbur, 816 Scherer Ave., Oconto, Wisconsin.
LaDassor, Gray, 3416 Lucas-Hunt Rd., St. Louis 20, Mo.
Midwest Inter-Library Center, 5721 Cottage Grove Ave., Chicago 37, Ill.

University of Minnesota, Minneapolis 14, Minnesota.
Morse, Dan, M. D., Box 60, Peoria, Illinois.
Muench, David J., 6124 N. 38th St., Milwaukee 9, Wis.
Richter, Arnold, Fairmount, Illinois.
University of Wisconsin Library, 2500 E. Kenwood Blvd., Milwaukee 11, Wis.
Villers, George J., c/o Ann Arbor R. R., Glencoe, Illinois
Yager, Richard S., 1114 Old Elm Lane, Glencoe, Illinois

Four of these new members were signed up by Dr. E. G. Bruder when he was at the Central States Archeological Society meetings in St. Louis in January.

As of January 1957 the membership in this Society is 367. Two years ago in March 1955 our membership was 320. We have been growing the past few years but we are sure there are still many people who would be interested in our group if they knew about it.

We mourn the death of one of our long-standing members, Art D. Tushingham of the Huronia Museum, Midland, Ontario, who died in October, 1956.

SIX OLD COPPER IMPLEMENTS FROM LONG LAKE, FLORENCE COUNTY

In July, 1956, six copper implements (Fig. 1) were found on the surface and a few inches below in an area of about 3 square feet, on the north shore of Long Lake (about 150 feet from the shore). They were found by Nicholas Weitermann and Ben and Agnes Meyer on Mr. Meyer's farm, near the barn. No bones were found with these. The find was reported to the Milwaukee Public Museum by Bruce Weitermann. Long Lake is near the village of Long Lake.

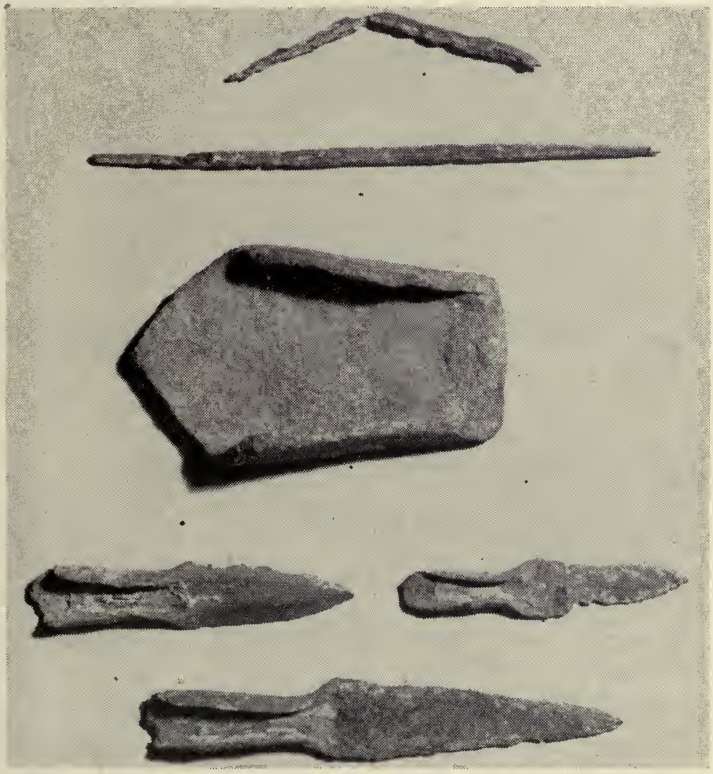


Fig. 1. Cache of six implements found in 1956 on surface near Long Lake, Florence County.

THE WISCONSIN ARCHEOLOGIST

AN OLD COPPER SITE AT MENOMINEE, MICHIGAN, George I. Quimby 37

A FLUTED HAMMER? Arthur Niehoff 41

POTTERY RESTORATION, Eldon G. Wolff 43

INTERESTING WISCONSIN SPECIMENS 57

KILLED BY AN ARROW, Quinn and Burcaw 58

COLLECTOR'S CORNER 59

KANSAS CITY, MO.
PUBLIC LIBRARY

AUG 6 1957

WISCONSIN ARCHEOLOGICAL SOCIETY

Milwaukee, Wisconsin

Incorporated, 1903

For the purpose of advancing the study and preservation of Wisconsin Indian Antiquities.

Meets every third Monday of the month at the Finney Neighborhood Library, Sherman and North Avenue, Milwaukee. (Except during July and August.)

OFFICERS

PRESIDENT

Kirk Whaley

VICE-PRESIDENTS

H. W. Cornell — Ellis Burcaw — Herman O. Zander

Laurence Kracht — Dr. D. A. Baerreis

DIRECTORS

Dr. R. E. Ritzenthaler — Kermit Freckmann

ADVISORY COUNCIL

Frank Achen
Wm. K. Andrew
H. S. Breitwish
Dr. E. G. Bruder
Edw. Eichenberger
W. E. Erdman
Patricia Ewen
Kermit Freckmann
William Godfrey
Robert L. Hall
M. F. Hulbert
Zida C. Ivey
A. E. Koerner
Mrs. Theo. Koerner
Dr. H. W. Kuhm
Robert Maher
W. C. McKern
Robert Menten
Louis Pierron
Arthur W. Quan
J. Ringeisen, Jr.
Chandler W. Rowe
Chas. G. Schoewe
Paul Scholz
Lincoln Smith
Albert Vidas
Dr. A. C. Whiteford
Warren Wittry

TREASURER

Arthur Niehoff, Milwaukee Public Museum, Milwaukee 3, Wis.

SECRETARY

Phil H. Wiegand, 1276 N. 63rd Ct., Wauwatosa 13, Wis.

EDITOR

Robert Ritzenthaler, Milwaukee Public Museum, Milwaukee 3, Wis.

MEMBERSHIP FEES

The Wisconsin Archeologist is distributed to members as part of their dues.

Life Members, $50.00 — **Endowment Members, $500.00**

Sustaining Members, $5.00 — **Annual Members, $2.00**

Institutional Members, $2.00

All communications in regard to the Wisconsin Archeological Society and contributions to the Wisconsin Archeologist should be addressed to Phil H. Wiegand, 1276 N. 63rd Ct., Wauwatosa 13, Wis. Entered as Second Class Matter at the Post Office at Lake Mills, Wisconsin under the Act of August 21, 1912. Office of Publication: 204 N. Main St., Lake Mills, Wis.

THE WISCONSIN ARCHEOLOGIST

Published Quarterly by The Wisconsin Archeological Society

New Series

MILWAUKEE, WISCONSIN, JUNE, 1957

AN OLD COPPER SITE AT MENOMINEE, MICHIGAN

George I. Quimby

Curator North American Archaeology and Ethnology
Chicago Natural History Museum

In the collections of the Chicago Natural History Museum there is a group of eleven copper artifacts, which according to the catalog records, came from a burial mound near the Menominee River in the city of Menominee, Michigan.

These artifacts, representative of the Old Copper culture, were obtained in 1900 by the Museum from Edward F. and Walter C. Wyman, and are as follows:

One crescent-shaped knife (Cf. Wittry 1951, type III-A). This specimen, 7⅞ inches long, is illustrated in Fig. 1, bottom row, left. The catalog number is 68134.

One wedge or chisel with expanded head and hammer marks. This specimen, 6⅞ inches long, is shown in Fig. 1, middle row, left. The catalog number is 68135.

Six socketed spear points with trianguloid blades, flat faces, beveled edges, and sockets with rectanguloid sections and straight bases (Cf. Wittry 1951, type I-J or variant thereof). Specimen number 68136, illustrated in Fig. 1, top row left, is 6⅜ inches long. Specimen number 68137, shown in Fig. 1, top row right center, is 4⅜ inches long. It has a long socket that is stepped with a corresponding protusion on the back. Specimen number 68139, illustrated in Fig. 1, top row at right, is 3 inches long and has a slight step in the socket. Specimen number 68140, not illustrated, is 5⅜ inches long. Specimen number 68141, also not illustrated, is 4⅝ inches long. Specimen number 68143, shown in Fig. 1, top row, left center, is 4⅜ inches long.

68135
68142

Two stemmed or tanged spear points with trianguloid blades, flat faces, beveled edges, and flat tangs (Cf. Wittry 1951, types I-G1 and I-I). Specimen number 68142, illustrated in Fig. 1, middle row, right, is 4½ inches long. Specimen number 68138, shown in Fig. 1, bottom row, right, is 5 inches long.

One small leaf-shaped blade or spear point. This specimen, 2-5/16 inches long, is not illustrated. The catalog number is 68144.

An obvious characteristic of the stemmed and socketed spear points is the blade with flat faces and rather broadly beveled edges. This seems to be a diagnostic trait that would be useful in tracing temporal and spatial distribution of a particular focus or segment of the Old Copper culture.

An early attempt to do so, presumably by Charles E. Brown, was published in the "Archeological Notes" of **The Wisconsin Archeologist** of July, 1902 (Vol. 1, No. 4, p. 102). The statement reads as follows:

"While on a recent visit to Milwaukee, Mr. John T. Reeder of Calumet, Michigan, exhibited to several members of the Section a particularly fine and interesting series of copper knives, arrow and spear points, a spud and a crescent and a number of flint implements obtained from the extensive and interesting camp sites at Portage Entry, Lake Superior."

"One socketed copper spear, with a rivet hole and rather broadly bevelled edges, measured 10 inches in length and 1½ inches in width at the base of the blade, near the socket."

"Spearpoints of this type have been collected in Marinette, Oconto, Brown, and Outagamie counties in Wisconsin and so far as can be ascertained but very rarely south of that rather limited district. In the Field Columbian Museum collections is an exceptionally fine series of these which were taken with other implements (of copper) from a burial mound near Menominee River, Menominee, Michigan."

This distribution of spear points with flat faces and beveled

edges in northeastern Wisconsin and the western half of the upper peninsula of Michigan is in part confirmed by a later study (Wittry 1950).

In his study of Wisconsin distributions, Wittry found that the spear points with broadly beveled edges had most frequently been found in northeastern Wisconsin (Cf. Wittry 1950, Maps 15 and 16). The spear points with narrowly beveled edges, a more abundant type, have been found freqeuntly in northeastern Wisconsin, but also have a high frequency in Washington County (Wittry 1950, map 12). Copper spear points having blades with flat faces and beveled edges were found at the Reigh site, an Old Copper culture burial ground in Winnebago County (Ritzenthaler, et al 1956).

I doubt that Chicago Natural History Museum's collection of copper artifacts from Menominee, Michigan was found in a burial mound. For one thing, all known Old Copper sites (except for cache sites) are burial grounds or cemeteries, not burial mounds.

Moreover, some nineteenth century collectors of copper applied the term burial mound to any mound-shaped natural feature.

Since Menominee, Michigan is situated on the sands deposited on the bottom of glacial Lake Algonquin, and since there undoubtedly has been some wind action on the sand in Nipissing and post Nipissing times, it seems likely that there would be many small mounds and ridges of sand created by natural agencies.

I would guess that the copper specimens described in this paper came from a natural mound or ridge of sand, if they came from a mound. I would further guess that the locus of this find is in the cemetery at Menominee, Michigan and that it is part of the site excavated by Dr. Albert Spaulding for the University of Michigan in 1956. It is also possible that the Wyman brothers in transcribing their records or attempting to read someone else's writing confused the term "burial mound" with "burial ground."

In any event it at least seems certain that eleven copper artifacts representative of the Old Copper Culture came from a locus near the Menominee River in Menominee, Michigan.

BIBLIOGRAPHY

BROWN, CHARLES E.
1902 "Archeological Notes" Wisconsin Archeologist, Vol. 1, No. 4, p. 102.

RITZENTHALER, ROBERT ET AL
1956 "Reigh Site Report—No. 3" Wisconsin Archeologist, Vol. 37, No. 4, pp. 97-129.

WITTRY, WARREN L.
1950 "A Preliminary Study of the Old Copper Complex" Bachelor of Arts Thesis at the University of Wisconsin.

1951 "A Preliminary Study of the Old Copper Complex" Wisconsin Archeologist, Vol. 32, No. 1, pp. 1-18.

A FLUTED HAMMER?

Arthur Niehoff

Franklyn Luebke of Iron Ridge, Dodge Co., Wisconsin reports a fluted stone hammer or axe which was found on his farm this spring. It is comparatively small, 4½" in length, with five pronounced flutes on one side and four on the other. Unlike most fluted axees it is not well finished and also the bit is not ground to a cutting edge. In fact it appears to have been used for pounding rather than for cutting. There is of course the possibility that it was originally made as an axe and that the edge was worn away through use. This specimen is unique to Wisconsin to our knowledge.

Figure 1

POTTERY RESTORATION

Eldon G. Wolff

Neither amateur archeologists nor professionals can expect to find perfect specimens of pottery or, for that matter, other items of friable prehistoric household use. To discover a perfect, unbroken specimen is the traditional "once in a lifetime." Amateurs as well as professionals thus have the same problem, to put the pieces together and restore the missing sections. While a well equipped laboratory is ideal, it is possible to do excellent work at home.

Pottery restoration is divided into two major headings: 1), repair of broken parts where all units are present, and 2), restoration of missing sections. We will first consider repair.

If all part of a vessel are present, nothing more need be done beyond joining the cleaned fragments by means of an adhesive and letting the units dry in a sand box. Glue is not recommended. A commercial cellulose cement is more acceptable. "Ambroid" cement has been found to be excellent. If improper joints have been made or if in the future it is desired to re-do the job, the cement may be readily dissolved.

There is always the likelihood that the joint is incorrect. Possibly, in the overall assembly, the larger assembled units present unsatisfactory curves. Perhaps it may be desirable to alter certain curves or sherd positions in order to produce a more reasonable vessel. The previously cemented joints may be softened or else completely separated by the application of acetone. Remember to use C. P. acetone, not the "commercial" grade, which latter may readily becloud the cement and make it unpleasantly milky in appearance.

CAUTION! Acetone is very inflammable; do not use near fire or flame; have adequate ventilation.

If, when fitting the cement-covered edges together, some of the adhesive squeezes out, as it usually does, a wiping with an acetone-moistened cloth will normally remove the excess. Any cement-glazed edges or surfaces may be similarly cleaned after all repairs have been made. In instances sand may adhere also, to be similarly removed.

The sand box referred to previously is a tray with a two or three inch layer of sand in it, into which the freshly united fragments are pushed, to be supported thus until dry. Drying

rarely takes more than a half hour, during which time more pieces may be fitted together and similarly cemented.

It will not be until all the sherds have been joined together that one may determine what is missing, but be assured that normally at least a part of the bottom of the vessel will be absent. This appears to be due to the action of heat from the cooking fire, soaking with water, or the crushing effect of supporting fireplace stones. The replacement of such small areas is a rather simple process and is accomplished as outlined in the next step. Here, however, we encounter more tools and materials which are sufficiently important to keep in mind.

The area which is to be restored must, after the edges have been cleaned, be backed with a temporary dam which overlays the area of restoration. For this purpose a "pancake" of plastelene is used. Plastelene is a non-drying modeling clay which no doubt can be found under a variety of trade names. It will be found useful in a number of other steps in pottery restoration.

This "pancake" is inserted into the vessel, which is obviously of the wide-necked variety, and then pressed against the inner surface of the container, covering the gap from the inside. It is so applied that, when the restoration plaster is put into place, it will not only fill the missing area, but also flow a bit over the inner surface of the pot, thus affording additional anchorage for the resulting plug. In instances of heavy, coarse-tempered ware, such additional coverage is usually not needed, but it is recommended in cases of thin-walled pottery, where the edges may be quite smooth, offer little anchorage, and may allow the plug to drop out.

Having the clay dam in place, we next come to the filling or restoring of the missing section. Materials and techniques are so basic that this portion of the work should be well understood, inasmuch as later and more extensive operations depend upon them also. Do small sections first to become familiar with mixing and applying methods.

Filling material is ordinary plaster of Paris which, if bought in large quantities, may be obtained under the name "quick setting moulding plaster." While ordinary plaster as it comes from the bag, weak as it is, will do for small area filling, a

specially prepared mix is advisable for major restorations. Such a mix will be described later where its application will be discussed.

For the present choose an area of not more than an inch or so in diameter. Mix the plaster, in sufficient quantity for all restorations in the specimen, with dry color. Burnt umber is a good material for coloring, although others may serve. Beware of reds or other intense colors as they may flow after casting, during drying, and produce objectionable irregularities in final color.

Sift the plaster carefully, add color slowly, and mix thoroughly, DRY. Take a small spoonful of the mix, add water, and pour on to a slightly oiled piece of glass. Let it set. Thereafter remove the piece of plaster from the glass and dry it thoroughly. When dry, scrape the surface and dress it down with a knife, file, or sandpaper. Observe the color. It will probably be too dark, as the addition of water to the dry mix will deepen the tone. Thereafter, using personal judgment, add more plaster or color to the unused quantity until it appears satisfactory.

It is not advisable to use uncolored plaster, as the white is very intense and is almost impossible to remove entirely once it has flowed over a portion of the outer surface of the vessel, as usually happens.

If the restoration is not dark enough, the color may be intensified later with paints, but the result is not always satisfactory.

Inasmuch as a small area is first to be filled, an old teacup will serve as a mixing bowl. Pour water into the cup. Experience will tell how much to use. A quantity double that needed to fill the gap is ample. Slowly add the colored plaster, tapping it from a spoon onto the surface of the water. Add only enough to take up the water. Less will make too thin a mixture; more will make the resulting restoration chalky.

Next stir the mixture thoroughly for about a minute, or until it becomes creamy. Longer stirring is possible, but remember that, the longer one stirs this plaster, the faster it sets when stirring is stopped.

The mixing bowl is now tapped gently for about a half

minute, this causing the confined air to rise to the surface in bubbles, carrying with it a small quantity of unmixed color. This froth is skimmed off with a spoon and is discarded.

The edges of the sherds surrounding the area of restoration are now moistened with water. Do this thoroughly. Excess may be removed by inverting the pot and allowing the water to run out.

These operations total about three minutes, which are well within the setting time of the plaster. The latter is next poured into the gap with a spoon and enough applied to bring the final amount a bit above the surface of the surrounding sherds. The vessel with the restoration area properly filled is set aside carefully so that the plaster does not flow out of position, and the spoon, mixing bowl, and other equipment washed.

Washing should **not** be done in a sink. The plaster will ultimately plug the drain. Use a partly filled old mixing bowl or similar container which has had its inner surface slightly oiled. When the plaster ultimately settles to the bottom and sets, water may be poured off and the settlement at the bottom easily pried or slipped out because of the oil which serves as a separator.

After about ten minutes, touch the surface of the cast plug with the finger to see whether it has set. If not, wait another ten minutes. In larger restorations the setting can be gauged by the heat which is generated in the chemical process of setting.

When sufficiently set, but still very moist, the excess plaster is scraped off to nearly the surface ultimately desired. The operation at this point is very easy. Later, when the plug is almost dry, the surface may be finished and allowed to dry thoroughly.

The pastelene "pancake" may be removed any time after the plaster has set and any possible bits of adhering plaster picked off or washed off. This keeps the material clean and prevents plaster chunks from becoming embedded.

The above process will do very well for an entire pot if the areas of restoration in no instance are greater than about an inch or so. If larger areas are to be restored, a more sub-

stantial and stronger plaster will be needed. For this purpose either a plaster which has a pre-added hardener (commercially available) or a hardening solution are needed. The former is handled just like ordinary plaster, the latter needs preparation.

To make a hardening solution, add powdered dextrine to water and mix as one would mix starch. An excess of dextrine is desirable; it will settle to the bottom within an hour or so. The solution may well be prepared some time in advance, say the day before.

The solution, when perfectly clear, is decanted and mixed with water as needed, in the proportions of one part solution to two parts water. To the needed quantity of this the plaster is added as previously described, but an excess of plaster will be required. The solution does not absorb plaster as readily as water alone does. Mixing must be done very thoroughly with a fork rather than with a spoon, and the ultimate froth similarly skimmed off.

If hardened plaster is to be used at all, use it in all areas within a single pot, whether large or small, as the color will then remain constant. Water-set plaster and hardened plaster vary in color.

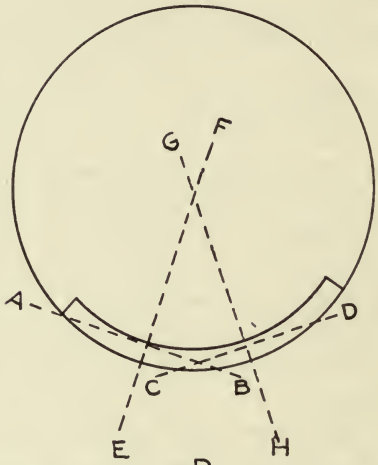
The reduction of the surface can be accomplished sooner with hardened plaster. Do not worry about the scrapings adhering to the sherds. They are already set and will not combine with the pottery. Water will wash them off, possibly aided with an ordinary paint brush.

As an afterthought, if the sherds are weak and tend to crumble when wet, which may be determined before the repairs are made, the fragments can be greatly strengthened by soaking in a very thin solution of the cellulose cement, thinned with acetone. If, after drying, a glaze appears, it can be removed with a bit of acetone. Another method of removal is to give the cement-soaked sherds a quick dip into acetone before drying. Allow to dry with the outer surface upward, resting the sherds upon a piece of cloth or absorbent paper.

Major Restoration

The essential requirements in the reconstruction of a ves-

FIGURE 1.



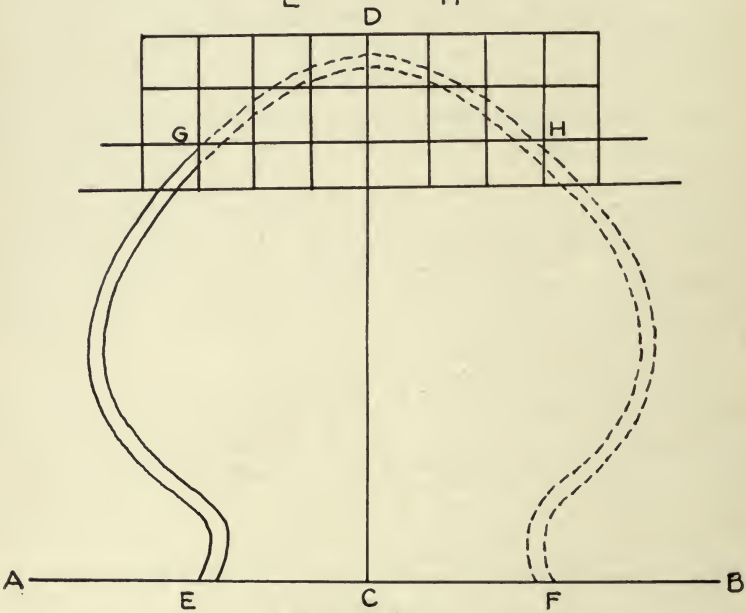


FIGURE 2.

sel which is represented by only a relatively small rim sherd are: (1) one or more horizontal curves to determine the diameter at least at one point, and (2) enough of the vertical curve to illustrate the outline from the lip down past the shoulder. With these present, a fragment representing ten percent or less of the vessel may be sufficient to permit a reasonably accurate restoration.

In the accompanying illustrations an ideal sherd has been chosen as an example. To determine the horizontal curve upon which the radius is to be projected, a bar of plastelene, about one inch square and as long as needed, is pressed against the lip of the sherd, thus impressing the curve into the clay. This curve is transferred upon paper (Fig. 1). The arc is subtended (lines AB and CD), whereupon perpendiculars are centrally erected (EF and GH). In an ideal and true arc, the point of intersection of the perpendiculars locates the center of a circle of which the arc is a portion, the distance between center and arc naturally being the radius of the circle.

Inasmuch as the rims of Indian pottery are never true circles, an assortment of possible centers will be noted. The best average of these points is taken for final profiling. With similar curves projected at several points, if possible at least at the shoulder of the vessel, diameters at those points may be determined. The more diameters determined, the better and more accurate the final projection and restoration will be.

The vertical profile of the vessel is next. A portion of figure 2 illustrates the inverted position of the sherd which is needed for profiling. On a board (AB) the sherd is set in an inverted manner, lip against the board, so that the sherd (EG) is in proper position relative to the board. In other words, the "angle" AEG should be the same here as it would be if the entire vessel, not the sherd alone, were present. A piece of plastelene is pressed against the outer surface of the sherd just as it was in taking the horizontal curves and additional clay is pressed against the portion of the board AE. The hollow "angle" is well filled with clay and, when the plasteline correctly records the curve of the sherd and its position relative to the board, it is trimmed vertically with a knife and

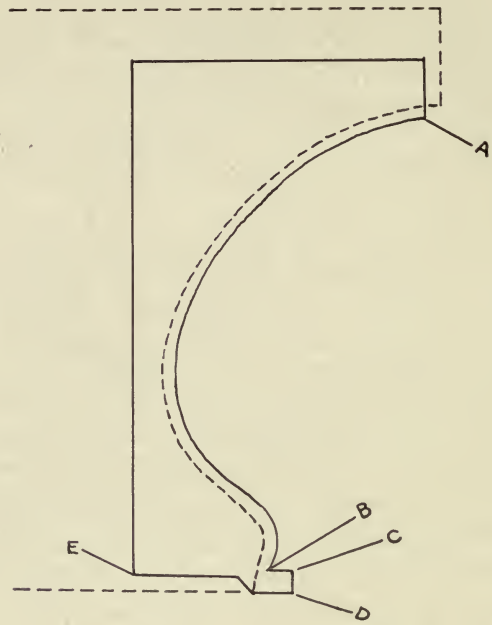


FIGURE 3.

carefully removed. The outlines of the curve and the flat surface are traced upon paper, following a line AB which had previously been drawn.

The radius of the lip curve, along with other possible radii, is now noted from E to C, establishing a vertical center line for the pot. CD should be at right angles to AB, and any irregularities compensated for by tilting the position of EG. If the sherd it at all regular little difficulty will be encountered here. In instances considerable juggling is needed before a satisfactory position is arrived at.

Having established the position of the curve EG and the vertical center line CD, the profile of the sherd is repeated at FH, the distance EC being the same as CF, and the curve FH a mirror image of the sherd EG.

The missing base is next drawn in free hand, using graph squares for accuracy. The result will be a vertical section of the complete vessel. The basal curve will depend somewhat upon a general knowledge of shape styles for the cultural variety of ware.

The curve DGE, on its base AE, is used for the template shown in figure 3. This template, shown in solid line, is cut of thin sheet metal, ordinary galvanized iron being satisfactory. After proper dressing to smooth the cutting edge, the template is fastened to a supporting board (shown in dotted lines) with small nails. This board is so shaped that the cutting edge of the metal is exposed beyond the edge of the board.

The curve AB (Fig. 3) represents half of the vertical section of the pot. The lip BC is included to assist in clearly defining that part of the vessel in its later stages of restoration. Additionally, a riser CD is included, after which the base DE rises a bit to allow clearance in the subsequent turning process. The template thus prepared may be kept indefinitely until it is convenient to engage in the next step.

The template is used with the wheel mechanism shown in Plate 1. This consists of a box of approximately the dimensions shown, although it may be made smaller if material at hand warrants it. Near one corner an upright is fastened in such a manner that one edge of the upright alines with the center of the box. To this the template is later fastened with G-clamps. In the center of the top of the box a short piece of pipe fitted with a base flange is fastened. This serves as a pivot for the wheel. A hole of equal size is drilled in the center of the wheel, the latter consisting of five-ply, one-inch bellow stock. This is supported upon three bearings or casters. The center pipe is left long until the wheel is fitted with its bearings, after which any protruding amount is cut off so that none extends above the surface of the wheel. Reasonably near the center of the wheel three holes are drilled and fitted with dowels which extend upward for two or three inches. The top surface is faced with a sheet of celluloid or some other plastic, held with thumb tacks; the lower surface may well be faced with sheet metal to prevent undue wear, as

PLATE I

Turntable upon which the clay form is made.

the weight of the clay to be used later may be considerable.

The template is fastened to this assembly as suggested, the cutting edge of metal facing that surface of the upright which is aligned with the center of the wheel. Point A of the template (Fig. 3) should be directly above the center of the wheel and point B should be as far from the center as the dimension EC of figure 2. Point D of figure 3 should not quite touch the surface of the wheel, thus avoiding friction and drag.

Water clay (not plastelene) is now packed around the dowels which extend above the surface of the wheel, and the build-up process continued, as the wheel is slowly revolved, until the clay comes in contact with the template. Applying clay and revolving the wheel gradually produces a solid mass of clay in the form of the vessel which is being restored. The template cuts off any excess which may be applied. When the clay form is completed the template is removed from the upright.

The sherd, or each of several sherds, is next held against the form in proper place and its outline scratched into the

PLATE II
The clay form partly completed. A wooden template is being used.

clay. The area so marked is dug out of the form and the sherd inset so that its surface continues with the surface of the form. Slight irregularities in the clay are modeled and smoothed by hand. After complete forming, the clay surface is lightly smoothed with a camel-hair brush and water, after which it is lightly flushed with an atomized spray of water. This smooths the surface and gives a pleasing finish to the form. At this point the restoration consists of a solid mass, exactly the size of the finished pot, having the sherd set in the proper place.

Little gobs of sticky wax or some material like putty, irregular in form, are now applied to the surface of the sherd to serve as anchors, holding the sherd to the mold in a later stage, after which the sherd is primed with a separator such as liquid soap. The clay needs no separator as it serves as such itself.

The preparation of the mold now follows. Ordinary plaster of Paris is added to a quantity of water until the water will absorb no more and the mass, after stirring, is smooth and creamy. This mix is slowly poured over the form, encasing it completely with a flowed layer of about ¼ inch in thickness. This is allowed to set firmly. Excess plaster which drips down on to the plastic-covered wheel is removed during the setting period, care being taken not to disturb that on the form. When setting is completed, the surface of the mold is brushed with clay water, that is, water in which clay has been stirred and held in suspension. Thereafter another layer of plaster is applied over the first. Depending upon the size and weight of the clay form, three or more layers of plaster may be needed for the mold, thus giving it sufficient strength.

When the mold thus prepared is firmly set, it, along with the clay and sherd which it encloses, is lifted off the wheel and inverted, after which the clay is carefully dug out. Being careful not to disturb the sherd which is being held to the mold by the anchors which had been applied previous to molding, wash the mold with water, being careful to clean off all clay from the sherd edges.

The inner surface of the cleaned mold is next painted with liquid soap, being careful not to get the soap on the sherd.

A quantity of colored plaster is mixed with the hardening solution previously described and mixed thoroughly, after which the mixing container it tapped to bring the bubbles to the surface and the froth skimmed off. The mixed plaster is poured into the mold and the latter rotated by hand so that the entire inner surface is covered by at least a thin layer of plaster. The lip and riser should also be covered. Excess plaster is poured out and back into the mixing bowl from whence, in a minute, it is again poured into the mold and the process repeated. Each time a bit more of the plaster mix adheres to the mold and the cast is built up. Care should be taken not to cover more than the margins of the sherd with this plaster.

If the mold is very large or if the plaster sets too quickly, another batch may be prepared and used directly on the first layer. A small or medium vessel may readily be cast with one mix of plaster, larger one needing more. In extremely large specimens, an incorporation of strips of scrim with plaster is advisable to strengthen the restoration. This is, however, rarely necessary.

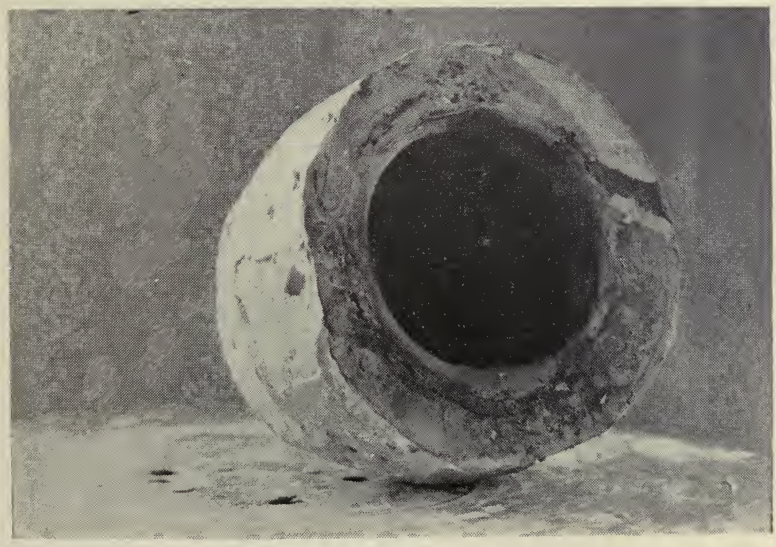


PLATE III

The mold with plaster cast enclosed.

After the cast has hardened within the mold for two hours, it is safe to break away the latter. This is done with chisel and mallet, one layer at a time being removed. Ultimately the cast lies exposed. The rim is next trimmed to proper thickness and the riser removed. A knife is the best tool for this work. Slight imperfections wihch may appear are filled with additional colored plaster and the completed cast, trimmed and finished, is washed with water. After drying it is ready for exhibit.

PLATE IV

The mold partly broken away, exposing the cast with sherds in place.

Interesting Wisconsin Specimens

GENICULATE

Of banded slate, surface find at New Holstein, Calumet County. Length 2½ inches width 1¾, oblong hole through the short wing. Use is unknown for these "knee shaped" objects. Milwaukee Public Museum specimen 2318.

TRADE CONCH SHELL

Florida horse conch (Pleuroploca gigantea Kiener) of which part of the top and parts of the interior have been ground off. Length 21". A prehistoric trade item found near Russell, Sheboygan County. Milwaukee Public Museum. Specimen 2272.

KILLED BY AN ARROW

James Quin and Ellis Burcaw

A few miles southwest of Potawatomi State Park on a rocky knoll rising abruptly out of Green Bay, campers digging a pit struck human bones and notified the Neville Public Museum. As one might expect, however, they continued digging the pit in the same spot, piling the bones to one side. When we arrived on the scene most of one skeleton and part of another had been removed. We proceeded to excavate the rest in what the crowd of garrulous adults, dogs, and small boys considered to be an agonizingly slow manner, and learned that the remains were of two young male adult Indians buried without articles of any kind in a common, somewhat too-small grave. The bodies were on their backs, side by side, turned slightly toward each other, with the heads approximately northwest of the feet.

It was obvious that one of the men had been killed by an arrow for we found the point deeply imbedded in the left front of a lumbar vertebra, with, of course, no signs of healing. The angle of penetration indicated that the arrow entered from above as though the victim had been crouching or as though he had been on the water's edge while his adversary had been on the rise of ground looking down on him.

The arrowhead was of the triangular Winnebago type, 3.8 cm. long by 2 wide at the base, and would suggest that a party of Winnebagos had killed two Indians of another group in a skirmish, yet presumably not defeating them so badly that the survivors of the other group were not able to bury their dead. Surely only people burying their friends, or archeologists, would dig in such a deposit of rocks and gravel.

All we can really be sure of is that someone was shot by an arrow, but it does not seem impossible that the burial was a souvenir of a clash between the Winnebago and the Potawatomi during the latter tribe's movement down the western shore of Lake Michigan in the late 1600's.

THE ANNUAL MEETING OF THE WISCONSIN ARCHEOLOGICAL SOCIETY was held at the State Historical Museum on May 4th. Our thanks go to Dr. David Baerreis and Mr. Warren Wittry of the Charles E. Brown chapter, for dinner and program arrangements. The afternoon program was as follows:

1. Tyler Bastian (Beloit College): THE BELOIT COLLEGE MOUND GROUP, RECENT EXCAVATIONS (slides).
2. Jack Steinbring (U. of Wis.): A SUMMARY OF RECENT ARCHEOLOGICAL EXPLORATIONS IN THE RUSH LAKE AREA, Winnebago Co. (slides).
3. Neil Ostberg (Milwaukee): RECENT DISCOVERIES AT THE REIGH SITE, Winnebago County (slides).
4. Franklin B. Farvour (Ripon): ARCHEOLOGICAL PHOTOGRAPHY IN THE FIELD AND LAB (slides).
5. Dr. E. G. Bruder (Milwaukee): OLD COPPER ARTIFACTS IN THE BRUDER COLLECTION (slides).
6. Robert L. Hall (Rock Co. Hist. Soc.): FIELDWORK IN THE ROCK RIVER AREA (slides).
7. Robert E. Ritzenthaler (Milwaukee Public Museum): WISCONSIN ARCHEOLOGY (movie).

A special exhibit of HOPEWELL INDIAN ART AND ARCHEOLOGY is now showing on the first floor of the State Historical Museum, Madison. Some of the finest Hopewell specimens in existence have been assembled from 29 museums and private collections throughout the country to make this truly an outstanding exhibit. Two rooms of exhibits include such pieces as the Knight Mound (Illinois) pottery figurines, the horned serpent and some of the beautiful effigy pipes found in the cache of 200 from the Turner Mound (Ohio). Examples of the unusual Marksville (Alabama) pottery vessels are shown as well as some of the more spectacular mica and copper cut-outs from Ohio. Good examples of Wisconsin Hopewell, including the famous funerary masks

from Barron County, are shown. This show is worth a special trip to Madison.

MR. EARL F. CROISANT, Route No. 1, Omro, Wisconsin is interested in exchanging 3 volumes of the Bureau of American Ethnology for old guns (octagon barrel type) Civil War carbines, pistols, powder horns or flasks, old cartridges. Volumes (in good condition) are Annual Report No. 33 (Hopi Designs on Pottery et. al.), and Annual Report No. 35, 2 volumes, Boas' Ethnology of the Kwakiutl.

The following NEW MEMBERS are welcomed into the Society:

Hamper, Stanley R., 807 S. 4th St., Aurora, Ill.
Lehmann, Dr. F. W., 65 S. Main St., Hartford, Wis.
Ritter, Robert, 2835 S. 56th Ct., Milwaukee, Wis.
Dedrick, Frank, Brodhead, Wis.
Chicago Natural History, Museum, Chicago, Ill.

Your editor, who spent February and March on a collecting and photographing trip into Mexico and Guatamala, wishes to thank ARTHUR NIEHOFF for help in getting out the March issue of the Archeologist. Mr. Niehoff left in May for a six month field stay in Trinidad where he will study adjustment problems of the East Indians.

Member ROBERT VOGEL has opened a private Museum of historical and archeological items which he calls the LAKE COUNTY MUSEUM. The building is a large barn with two floors of exhibits. Take highway 41 to Illinois-Wisconsin border. Continue 2 miles. Signs will guide you to the spot. Open weekends.

WARREN WITTRY heads a crew to continue excavation of a stratified rock shelter site at Natural Bridge in Sauk County. Work will be done during July and August under the aegis of the STATE HISTORICAL SOCIETY and the WISCONSIN ARCHEOLOGICAL SURVEY.

SOCIETY MEMBERSHIP IS NOW 360. Why not take a minute to drop me a card with names of prospective members. We'll do the rest. By the way one dollar will cover dues for the remainder of the year for any new members.

Bob Ritzenthaler, Editor
Milwaukee Public Museum

THE WISCONSIN ARCHEOLOGIST

KANSAS CITY, MO.
PUBLIC LIBRARY

JAN 7 1958

THE KICKAPOO INDIANS: FIRST ONE HUNDRED YEARS OF WHITE CONTACT IN WISCONSIN, James Silverberg 61

INTERESTING WISCONSIN SPECIMENS 182

COLLECTOR'S CORNER 183

WISCONSIN ARCHEOLOGICAL SOCIETY

Milwaukee, Wisconsin

Incorporated, 1903

For the purpose of advancing the study and preservation of Wisconsin Indian Antiquities.

Meets every third Monday of the month at the Finney Neighborhood Library, Sherman and North Avenue, Milwaukee. (Except during July and August.)

OFFICERS

PRESIDENT

Kirk Whaley

VICE-PRESIDENTS

H. W. Cornell
Ellis Burcaw
Herman O. Zander
Laurence Kracht
Dr. D. A. Baerreis

DIRECTORS

Dr. R. E. Ritzenthaler
Kermit Freckmann

ADVISORY COUNCIL

Frank Achen
Wm. K. Andrew
H. S. Breitwish
Dr. E. G. Bruder
Edw. Eichenberger
W. E. Erdman
Patricia Ewen
Kermit Freckmann
William Godfrey
Robert L. Hall
M. F. Hulbert
Zida C. Ivey
A. E. Koerner
Mrs. Theo. Koerner
Dr. H. W. Kuhm
Robert Maher
W. C. McKern
Robert Menten
Louis Pierron
Arthur W. Quan
J. Ringeisen, Jr.
Chandler W. Rowe
Chas. G. Schoewe
Paul Scholz
Lincoln Smith
Albert Vidas
Dr. A. C. Whiteford
Warren Wittry

TREASURER

Arthur Niehoff, Milwaukee Public Museum, Milwaukee 3, Wis.

SECRETARY

Phil H. Wiegand, 1276 N. 63rd Ct., Wauwatosa 13, Wis.

EDITOR

Robert Ritzenthaler, Milwaukee Public Museum, Milwaukee 3, Wis.

MEMBERSHIP FEES

The Wisconsin Archeologist is distributed to members as part of their dues.

Life Members, $50.00
Endowment Members, $500.00
Sustaining Members, $5.00
Annual Members, $2.00
Institutional Members, $2.00

All communications in regard to the Wisconsin Archeological Society and contributions to the Wisconsin Archeologist should be addressed to Phil H. Wiegand, 1276 N. 63rd Ct., Wauwatosa 13, Wis. Entered as Second Class Matter at the Post Office at Lake Mills, Wisconsin under the Act of August 21, 1912. Office of Publication: 204 N. Main St., Lake Mills, Wis.

TABLE OF CONTENTS

Page

THE KICKAPOO INDIANS: FIRST ONE HUNDRED YEARS OF WHITE CONTACT IN WISCONSIN, James Silverberg 61

Introduction 61

Part I. The Prehistoric Picture 67

Part II. Kickapoo History, 1640-1752 69

Part III. The Impact of French Mercantile Capitalism 137

Part IV. The Cultural Position of the Kickapoo 156

Bibliography 167

INTERESTING WISCONSIN SPECIMENS 182

COLLECTOR'S CORNER 183

THE WISCONSIN ARCHEOLOGIST

Published Quarterly by The Wisconsin Archeological Society

New Series

MILWAUKEE, WISCONSIN, SEPTEMBER, 1957

THE KICKAPOO INDIANS: FIRST ONE HUNDRED YEARS OF WHITE CONTACT IN WISCONSIN

James Silverberg

Revised from "The Cultural Position of the Kickapoo," M. A. Thesis, University of Wisconsin, Madison. The author wishes to express his grateful appreciation to Drs. David A. Baerreis and C. W. M. Hart of the University of Wisconsin - Madison, for their assistance in guiding the research, to his wife, Donna Crothers Silverberg, and to Lois Gelhausen Hein for assisting him with some of the source materials, and to Dr. Robert Ritzenthaler of the Milwaukee Public Museum for his aid in editing this revision.

INTRODUCTION

The Kickapoo Indians are correctly designated a central Algonkian tribe closely connected ethnically and linguistic ally with the Sauk and the Fox. Wissler's treatment in **The American Indian** justly includes them in his Eastern Woodland Area, although the separation of this area from his Plains Area is by no means as sharp as his presentation would seem to indicate. The distinction between Plains and Eastern Woodlands would, as a matter of fact, almost disappear if a pre-horse Plains were considered, as Kroeber surmised in his **Cultural and Natural Areas of Native North America,** (1947:90). The truth of this is especially evident for those tribes in this paper designated "Prairie," within which division the Kickapoo are found. There is little to distinguish "Prairie" tribes from the inferred "pre-horse Plains" culture.

In order to define the cultural position of the Kickapoo the writer was, of course, forced to investigate available references to Kickapoo culture and the culture of surrounding tribes. Tribes were then to be grouped by noting cultural similarities and differences. In comparison with other tribes in the general Upper Mississippi and Great Lakes area, the Kickapoo are mentioned in early and recent literature with

astonishing rarity. Perhaps this relative scantiness of references to the tribe tempted many writers to collate any and all cultural items referred to, to assemble all reported observations, and to present a whollistic picture of "Kickapoo culture" composed by weaving together these disparate scraps of information, in many cases quite artfully. Such a presentation seems to this writer, however, to be unjustified.

By linking together disparate scraps of cultural information gathered through three centuries and in a variety of locations, the functional interrelationships of the component parts of a tribe's culture cannot be assessed — a trait from 1640 does not functionally interrelate with traits from 1940. Such presentation is also unjustified because it obscures social change, in particular, acculturation. Were acculturation merely a matter of the substitution of one separate item of culture for a predecessor — guns in place of bows and arrows, say, or trade relationships with the agents of European mercantile capitalism in place of trade relationships with other Indian tribes — it might be otherwise. Perhaps then, errors in this artificially composite Kickapoo "culture" could be remedied very easily: simply by removing from the assembled traits any single elements whose presence could be demonstrated as due to European contact and hence inadmissible in a pre-contact cultural reconstruction.

The writer believes such a view of acculturation out of the question for anyone familiar with the literature of the contact period. It is out of the question even in the case of Indian tribes, such as the Kickapoo, who inhabited areas claimed by the French, so often alleged to be a European power which, in contrast to the British, left tribal cultures almost entirely intact. One reminder may point this up: The tribes did not meet "guns" alone, but faced that new and unfamiliar situation which the presence of guns helped generate; at a later period, 1670 on and perhaps earlier, they met the bearers of guns. For the skeptical reader the discussion on "the Impact of Mercantile Capitalism" (Part III), will indicate the material upon which are based these conclusions of the writer.

An alternative view of acculturation seems to be justified by the literature: namely, that an entire situational change was brought about at the very inception of the arrival of Euro-

peans in the Western Hemisphere, with European trade goods. The change occurring was not dissimilar to that described for the Iroquois by George Hunt, in his recent **Wars of the Iroquois.** Many aspects of a changed tribal situation considerably anticipated the appearance of the Europeans themselves in the interior lands away from the coasts.

With this in mind, the cultural position of any tribe such as the Kickapoo requires a thorough understanding of the history of European contacts and just such influences in anticipation of direct contacts. This view of acculturation rejects assertions frequently heard in ethno-historical writings, that "material culture was changed while social organization remained more or less unaffected"; (there are other like phrases).

Certainly, cultural data — the descriptive ethnographic material — are the most important raw material in anthropological research. The anthropologist is concerned with the bearing of facts of a cultural nature upon general cultural and ethnohistorical problems. It seems to the writer, however, that the first task is to get the historical background thoroughly under control before analyzing the details of culture, observed at so many different points through three or four centuries of European contact and in so many differing situational locations for the tribe under discussion. For this reason, the main body of this paper is almost entirely the product of historical research and historical presentation. In it, observations on the locations, migrations, trade relations, wars, population figures, and the like, have been given a chronological organganization from the year of first mention of the Kickapoo, 1640, up through about 1750.

In the early accounts, here one finds mention of trade with the Kickapoo, there mention of an alliance between them and other tribes; here a war upon the French, there military action under French direction against another tribe; here reference to a Kickapoo village location, there a report on Kickapoo tribal movements; here information on some Kickapoo going to Quebec, to Montreal, Detroit, Green Bay, some at Mackinac, and, then, scattered throughout the references there are population estimates. Taken together, these items may be used as a measure of acculturation, migration, population change, and other historical phenomena, for the first hun-

dred years of direct contact with Europeans. For this type of measurement, mention of the Kickapoo may be taken as exemplary. The comparative scarcity of references gives assurance that any emphasis influenced by the writer's selection of problems is minimal: the effect of acculturation, for example, is certainly not overplayed by infrequent mention of the tribe. These limited references have the effect, then, of giving spot-check control, almost a random sampling. on the problems illuminated.

The 1752 terminal point has been selected as the time initiating a period up to the present during which historical observations of the tribe have been presented with relative completeness in single reference works. Prior to 1750 large gaps are found in any single works, requiring the collating of myriad scattered and culturally insignificant though historically suggestive references from a wide selection of primary sources. Such collation has been a primary task for this writer. In addition, the period up through 1750 has been covered for a Wisconsin tribe with a view toward testing the widely-held view of French non-interference in pre-contact tribal situations. If an entire situational change is indicated for a scantily-referred to tribe, and for the very earliest century of direct contact, such a view of tribes in contact with the French would seem to be refuted.

The record of Kickapoo history is considerably clearer for the researcher from about 1750 on. This may be seen from a glance at Ludwik Krzywicki's chronological compilation of references to Kickapoo population figures, in **Primitive Society and its Vital Statistics,** and from reference to **The Handbook of American Indians North of Mexico** article on "Kickapoo," where far more detail (and greater accuracy) is found in the material from the last half of the eighteenth century on. It would avail this study little of value to carry the details of migration, settlement, remigration and resettlement, up to the present condition of "the tribe," a part living on reservations in Kansas and Oklahoma, and another part in Mexico after living in the southwest since early in the 1820's. Such detail would only confirm conclusions which emerge with sufficient emphasis from the data presented, such as the futility of discussing the "Kickapoo" as if there were such a localized en-

tity, or even as if there were one or two localized bands that constituted such an entity. The very existence today of several sets of "Kickapoo" is expressive of certain leading themes which are present in the details of Kickapoo history carried through slightly over one century, (around 1640 to 1752), in an almost year-by-year, and where possible, month-by-month account.

As frequently happens in research of this sort, leads have come to the attention of the writer as a result of accumulated information which in the interests of thoroughness should have been used in a reworking of the materials already consulted. One such lead is the possible association with the Kickapoo of two tribes hitherto usually regarded as separate: the Mascouten and Kitchigami (see **Handbook** articles on these two "tribes" for possible association with Kickapoo). Proper researching would have meant reworking all sources already consulted with the purpose in mind of collecting historical and cultural data on these two "tribes" (or, possibly two names for divisions of the Kickapoo). This could not be attended to in this paper.

In this connection, what are the "tribes" identified in the early literature? The problem of inconsistency in designating tribes has often been pointed out by researchers. The French had no standardized definition of what a "nation," or "tribe," or "confederacy" was; they did not recognize, or at least understand, "clans"; the term "family" was no more rigorously employed by them than the other terms.

Inadequate precision in such French designations has shifted responsibility for identifying "tribes" and other social divisions to those least qualified to do so: researchers writing several centuries removed from the actual happenings written about. Often such attempts at reconstruction by later historians or anthropologists have overlooked the essentially dynamic nature of Indian social groupings: at one and the same time a constant splitting up of growing population units — clans becoming phratries, phratries becoming tribes, tribes becoming confederations, both transitory and more permanent — and the counter-process of amalgamation.

The writers of secondary sources have frequently "frozen" some social unit-names into the status of "tribes," by contin-

ual reuse implicity, or by explicity expressed choice; but their choice in some cases may have been not alone arbitrary but inaccurate. Very often present day selection of what constituted a "tribe" in the seventeenth and eighteenth centuries has been guided by knowledge of those groupings which later in the historic period became "tribes" by modern ethnographic standards.

Related to this question is another which demonstrates the uselessness, from the standpoint of cultural reconstruction, of so many early accounts. Some "tribes" are haphazardly and inconsistently mentioned: in a description of what "the Indians" or "the savages" in general do, one people, designated by a name which is presumably tribal, will be singled out as representative of a trait or as exceptional in their counter-behavior.

The proper and precise identification of the tribe's location is made difficult, and, at times, impossible through the inconsistencies in the place-names referred to in early French and other sources and through the highly fluid nature of the units by which distances were designated in these accounts. "A French league is 2.76 miles, but the explorers' distances are not very accurate" (Kellogg 1925:212 fn). Another writer who may have neglected to investigate differences between the French and British measurements, and between the standards of different centuries, states that a league is 2.4 miles (Wood 1907:1). Tailhan cites the Jesuit, Dreuillettes, to the effect that one could reckon fifteen leagues per day going down-stream in a swift current, seven or eight going upstream (Blair 1911:165 fn). The same author quotes from a 1705 memoir sent to the Comte de Pontchartrain, that "a canoe properly managed can make more than fifteen leagues a day in still water" (pp. 228-229 fn). The Recollet Gabriel Sagard-Theodat is repeated as saying that ". . . one can usually make each day in a hurry, twenty-five to thirty leagues . . . provided there are no falls to pass and that one sails with the wind and the current . . ." (Kinietz 1939:51). Reckoning at 2.76 miles for every French league, the range allowed in these quotes is enormous: nineteen and one-third miles per day under adverse conditions, to approximately eighty-three

miles per day when the conditions and the need for speed are maximum.

Considerations of this sort have led this writer to follow rather rigidly mechanical rules which may damagingly have limited the content of the data assembled: one, that time periods be kept strictly apart and data be gathered chronologically; two, that generalized accounts applying to unnamed tribes be ignored; three, that accounts comprising information on the Kickapoo together with other tribes be used only when is is clear that all the information contained applies without question to the Kickapoo.

PART I

THE PREHISTORIC PICTURE

The only archaelogical references specifically mentioning the Kickapoo which have come to the attention of the writer have concerned earth or earth-and-stone constructions. Cyrus Thomas, in a general report on northern burial mounds, described the excavations of Colonel Norris in 1882, near New Albin, on the little or Upper Iowa River, in Allamakoe County, Iowa. Some of the structures found there were "box-form stone graves," made by a southerly tribe which did not, like the first occupants, rely upon enclosures for protection. This second occupation of the site and its box-shaped cists, "after a somewhat careful study of the question . . . are to be ascribed to the Shawnee, Delawares, and Kickapoos" (1887:30-31).

It is not entirely clear to this writer what his typological identification is based upon. Earlier in the same report he offers as a general typological category, "The Middle Mississippi Area or Tennessee district":

> " . . . From the Lower Mississippi and Gulf districts, with which . . . it is closely allied, it is distinguished chiefly by the presence of the box-shaped stone cists or coffins . . ." (p. 11).

However, Thomas does not indicate what has induced him to link this typological identification with the three tribes named; nor does he speculate openly on supporting evidence, if any, from the actual historical references such those assembled in Part II of this paper.

Dating these particular graves seems to be impossible although in a later report Thomas points out that during the early part of the nineteenth century Indians who also buried their dead in stone coffins were inhabiting the neighborhood of Monroe county, Illinois (south of St. Louis, Mo.). Without making reference to his earlier linking of the Kickapoo with the Iowa graves, he correctly challenges the assumption of his informant that the nineteenth century Monroe county Indians were Kickapoo, since "their most southern locality appears to have been in the region of Sangamon County" (of which Springfield is the county seat, 1889:29).

Both Hiram Beckwith and David I. Bushnell, Jr., refer to traditions which associate both the Kickapoo and Fox with the palisaded entrenchment known as Etnataek, on the Sangamon River in Illinois. The traditions go back to the expedition of Major Stephen Long in 1823 and they tell of a battle fought by those two tribes against a victorious alliance of Potawatomi, Ottawa, and Chippewa. Beckwith says that "Etnataek was near the Kickapoo village on the Sangamon. . ." (1880:184) while Bushnell paraphrases the report quoted by Beckwith to make it appear that the village and fortification were not neighboring but were one and the same (1920:62). Bushnell also quotes William Jones on the meaning of Etnataek to connect the site with the traditional battle. The fact that a gun was found in a mound of this area in adjacent Cass County, makes occupancy of the area by mound users as late as the second half of the seventeenth century. Bushnell concludes:

> "The burial mound on the Sangamon Bluff, in which the gun was discovered, may have been erected by the Kickapoo after the valley was abandoned by the Michigamea, and the Kickapoo may likewise have been the builders of other similar works occurring in the country which they once occupied" (pp. 62-63).

The writer feels that there may be some significance to the joint facts that (1) the Kickapoo and Potawatomi alone are listed in the current Siouan and central Algonkian clan lists with a "Man" clan, that (2) effigy mounds have often been assumed to be associated with clan totemism and this assumption has not been incontrovertibly challenged, and that (3)

there are some effigy mounds which have been identified as having "man" shapes which are as yet unexplained and not ascribed to any tribe or tribes. The fact that such mounds are very few in number cannot be taken as an argument in establishing or in invalidating any connection between these three given factors. There are too many other variables which are as yet uncontrolled, such as the recency and size of these "Man" clans, the nature of the connection between clan and mound, and the degree to which located and recorded effigy mound sites represents their prevalence before recent farming and other earth-disturbing activities removed them.

PART II

KICKAPOO HISTORY, 1640 - 1752

The Kickapoo are first mentioned on September 10, 1640 by their Huron name, Ontarahronon (Michelson 1933:551-552; Hodge 1910:135) in le Jeune's list of tribes taken ". . . from a Huron map that Father Paul Ragueneau sent me" (Thwaites 1896-1901, Vol. 18:231-235).

Le Jeune presented the "southern" tribes, presumably in order from east to west, including the Huron-Iroquoian tribes and sub-tribes, the Sauk, Fox, Mascouten or Potawatomi, then Kickapoo, and many unidentified names. He distinguished them from a list of "northern" tribes whose names were given to him by Jean Nicolet. The presence of this reference flatly contradicts assertions that the tribe was not mentioned (1) "until about 1667-70" (Hodge 1910:684), (2) "before the Relation for 1669-70" (Shea 1857:129), and (3) specifically not in "the first list of Western tribes" in the 1639-40 Relation.

The tribe may have been heard of or even visited by Pierre Radisson as early as the 1650's. The date of Radisson's travels in the Wisconsin area is problematical. At one point Kellogg is content to leave it at "between 1650 and 1660" (1917:5); elsewhere she discusses more specific alternatives, ranging between 1654 and 1658 (p. 31). One terminal point seems clear: his journal was written in 1668 (Vestal 1940: 208).

Radisson listed thirty-one tribes as living in the south, as

well as forty-one living in the north, and among the former is found "Ontorahronon." This seems to be the "Ontarahronon" of le Jeune's 1640 list mentioned above. As a matter of fact, Radisson's entire list seems to duplicate that of the Jesuit priest, with due allowances for misspelling and careless copying from the Relations, which, in 1658 or 1668, obviously were in manuscript form. Radisson says "I have seen most of those (tribes) . . ." (1885:246), but there is strong suspicion that he borrowed tribal names from le Jeune's list. Besides, "the frequent omissions in Radisson's account of his voyages and the uncertainty of his itinerary are quite as exasperating as his carelessness about dates" (Vestal 1940:185). How much of Radisson's narrative was supplied by a familiarity with the accounts of his contemporaries is a question that calls for investigation. Responsibility is assumed by the present writer for identifying "Ontarahronon" with Kickapoo and for suggesting that this widely cited "primary" reference work may in many instances result from plagiarism rather than first-hand experience as in the substantial identity between Radisson's tribal list and that of le Jeune which appeared at least one or two decades earlier.

Relying on linguistics and a probable confusion with a Shawnee section name they are "located" by Gale in 1600 between the Miami and the Shawnee in southern Ohio on a map and in his discussion (1867:172). (For other speculations as to earlier Kickapoo locations see Butterfield 1881:67, Thwaites 1902:xiii-xiv, Bacqueville de la Potherie, in Blair 1911:301, and Kellogg 1925:57 and 59-70.)

It is apparently a mistake to identify "Outitchakouk," mentioned by Druillettes in 1658, with "Kickapoo." There is an inconsistency in the **Handbook:** according to Mooney and Jones, that "Outitchakouk . . . refers to the Kickapoo . . . seems probable" (Hodge 1910:684), but it is also a synonym for "Atchatchakangouen" and is identified as the Crane clan of the Miami by Mooney (p. 107). The latter identification is confirmed by W. Vernon Kineitz (1938:6-7 fn).

Shea correctly calls attention to the omission of the name Kickapoo from the account of Wisconsin and Upper Michigan given by the Jesuits Isaac Jogues and Charles Raymbaut in 1641-42 and from any account by the ill-fated Rene Menard,

1660-61 (Shea 1857:129 fn). One recent writer has shown no hesitancy to place the Kickapoo in Iowa in 1660.

> "Their stay was undoubtedly short, though maps copying Delisle perpetuated the 'Kickapoo River' (on the west side of the Mississippi, probably the Upper Iowa) until the middle of the eighteenth century" (Mott 1838:270-271.

A discussion of de L'Isle's maps, which are dated forty years later around 1702, will be found further on in this paper. Another recent writer locates the tribe on October 1, 1665, "in this polyglot village . . ." on the southwestern shore of Chequamegon Bay where Allouez founded a mission (Thwaites 1895:405-406), whereas Kellogg feels that prior to peace with the Iroquois in 1666, "the Sauk, Fox, Kickapoo, and Mascouten . . . wandered hither and thither in the Wisconsin forests. . . ." (1925:99).

Nicolas Perrot, who was probably not in the Wisconsin area until 1668 (Kellogg 1925:123) and who may have edited his journals any time prior to 1717, describes intertribal wars of 1662-63 (?) when ". . . the Renards, the Maskoutechs, and the Kikapous . . . greatly contributed to defend (the Sioux) . . ." against the far northern tribes (Blair 1911:171). The sentence in which this occurs is most confusing and has caused considerable difficulty for all translators of Perrot's manuscript. Tailhan apparently agrees with the present writer's construction for he indexes this reference to the Kickapoo as "Alliee des Sioux . . ." (Tailhan 1864:xv).

In 1667 attempts were to be made to interest the Kickapoo, among other tribes, in M. Talon's plan for a formal taking-possession of all the Great Lakes area lands by the French (Blair 1911:345), but the ceremony was due to be postponed four years. The Kickapoo were urged by the Potawatomi, in the newly acquired role of this tribe as successful dealers in French merchandise direct from Montreal, to visit Green Bay bringing beavers, but they and the Mascouten, Miami, and some Illinois delayed a year after the Fox before going towards the Bay (Kellogg 1917:81). Kellogg suggests that the message from the Potawatomi stressed to these southerly Wisconsin tribes ". . . that it would no longer be needful for them to make the long journey to Chequamegon Bay . . ." for the trading (1925:127). Thwaites' implication that Allouez

had seen them at Chequamegon in 1665 might rest on such evidence as this.

The priest, Claude-Jean Allouez, describes them as in a village four leagues from "the Machkouteng" in 1669-70, although he does not visit them at this time (Thwaites 1896-1901, Vol. 54:233). Thwaites summarizes the differing opinions as to the location of this village: Butterfield espouses Green Lake County; Verwyst, near Corning, Columbia county (about five miles north of Portage City), with A. J. Turner of Portage in agreement; La Boule, near the village of Ste. Marie, Green Lake County; Gary, in Section 32, town of Rushford, Winnebago County (fn p. 308). Mooney and Jones seem to favor Verwyst, naming the location as Alloa (Hodge 1907:684). A local citizen explains Allouez' designation of these tribes as "mountaineers" by noting that 9.6 miles (4 leagues) from the probable site of the Mascouten village lies Mt. Tom, well-known for its prominence. He adds:

> "An Indian cemetery on the right bank of the Fox River where the White River unites with the Fox and well known to early settlers is doubtless not far from the site of these Kikabout cabins" (Wood 1907:1-3).

As to whether Allouez visited the Kickapoo, the writer is only able to read the account negatively. He makes no earlier reference to them in any case (Shea 1857:129 fn). It seems clearly wrong for Kellogg to say that Allouez ". . . made a twelve mile detour to visit a Kickapoo-Illinois group, who told him of the 'great river named Messi-Sipi,' from beyond which they had lately come" (1925:161). Allouez apparently had heard of "the Messi-Sipi" before he learned of the Kickapoo-Kitchigami village four leagues from the Mascouten village he did see. The writer believes Beckwith, normally very reliable, to have misinterpreted Allouez' account in saying that the priest visited a "mixed Miami-Mascoutin-Kickapoo village in 1669-70" (Beckwith 1880:153).

Claude Dablon, superior of the Ottawa mission until he was chosen to be superior for all the missions of New France in 1671, does not mention the Kickapoo in his 1670-71 Relation although he was present in the general area and named several other tribes. They may be among the " . . . three

tribes of different tongues," which he reported to be under Allouez' instruction in the village of the Mascouten, and among those tribes, "coming but recently from the regions of the southwest. . . ." (Thwaites 1896-1901, Vol. 61:139-143).

The Kickapoo did not appear at Sault Ste. Marie for the ceremony of taking-possession (1671) which Perrot attended with Sieur Daumont de Saint Lusson, the deputy of the newly returned Intendant, M. de Talon. Perrot says that the Fox, Mascouten, Kickapoo and Miami, did not go farther than Green Bay on their way to the Sault (Blair 1911:223), while Kellogg explains that a last moment illness prevented the Miami chief from going and the Potawatomi were asked to represent all four tribes (1925:185). "Perrot (or his copyist) . . . makes an error of two years in assigning the year 1669 as the date of that ceremony," says Tailhan (Blair 1911:222 fn), and Shea repeats this error (1857:29).

In mid-August 1672, Allouez found them at the Mascouten village he had visited three years before, counting over ninety Miami "cabins," fifty Mascouten, thirty "large cabins" of Kickapoo, twenty of Illinois and three Wea (Thwaites 1896-1901, Vol. 58:21-23). The writer is at a loss to explain the significance of Allouez' emphasis upon the size of Kickapoo cabins; perhaps it is in comparison with the others, but, if so, Marquette is not sufficiently impressed by the contrast to mention it on his trip the next year though he comments on the nature of "the cabins" in that village. Thwaites points out that this population for the village is certainly more than double Dabon's estimate of more than 3,000 Miami and Mascouten individuals in 1670 (p. 293). Presumably Thwaites bases his comment on the probable population which this enumeration of cabins implies. One recent estimate employs Marquette's observations among the Illinois — that each cabin has four to five fires and there are one or two families per fire — to translate "thirty large cabins" for the Kickapoo alone into a population of between 120 and 300 families (Krzywicki 1934:146). Hebbard estimated their warrior force at that period as 800 men (together with the Miami and, apparently, two groups of Mascouten (1890:35); Jenks has quoted him on this (1900:1107). The only earlier figure is an

estimated 2,000 souls, around 1650, given by James Mooney and quoted, among other sources, in the excellent summary of population references by Krzywicki (1934:406).

Allouez referred to this village as the mission of Saint Jacques. It lay west and "deeper in the woods" than the mission of Saint Marc where the Fox were represented in several clans, and which in turn was west of the mission of Saint Francois at Green Bay where Allouez mentioned as present the Potawatomi, Sauk, Winnebago, Menomini and Sinago Ottawa among others. In a subsequent summarizing reference, Allouez omits the Wea as residents of the Mascouten village but includes the Kitchigamich. Immediately after describing these three villages or "missions" he speaks of:

> "The village of Miami, where the atchatchakongonen are, and whither come . . . some for a short time, others for a longer time . . . tribes (which) dwell on the banks of the Mississippi and all speak the same language" (Thwaitees 1896-1901, Vol. 58:41).

If this be the same village as that which he described earlier and included under the mission of Saint Jacques, why, in the previous sentence describing that mission, does he mention the Miami only as "Marameg" and as "atchaterakongouen" (the latter being the Crane clan of the Miami)? It would seem strange that references to the very same tribes and clans should be spelled so differently in two consecutive sentences.

The phrase "deeper in the woods" does not accord with later descriptions of this habitat. It is probable that this general summary of the tribes to be encountered along the broader Fox-Wisconsin-Mississippi river route, including several western tribes known only by their visits to the Mascouten village (farther west than which the Jesuits had apparently not as yet penetrated) was written with the scene at Green Bay, the base of operations, in mind. If this interpretation is correct, anything to the west of the open marsh country at the Bay would appear wooded, and locations farther to the west would be depicted as "deeper in the woods."

Jacques Marquette, arriving at the village of the Mascouten, ". . . the limit of the discoveries which the French have made, For they have not yet gone any farther . . . ," found there Miami, Mascouten, and Kickapoo (Vol. 59:161-163.

See also Bushnell 1919:39 and Gale 1867:175). It is interesting that Marquette mentions no tribal names, no Fox village, for example, between the Menomini and this Mascouten village. Shea says ". . . the unpublished Relations from 1673 to 1679, mentioned them in this locality, always near or united to the Mascoutins". (Shea 1857:129) The present writer has been unable to find any mention of the Kickapoo in Thwaite's 73-volume collection of Jesuit Relations for this six-year period other than Allouez' letter which reported this same mission of St. Jacques to be far less advanced than others. It contained

> ". . . the Machkoutench, Kikabouas, Mimamis, and other tribes . . . (and he was) only . . . (able to attend it by . . . short visits, as I had not one to take me thither at the proper time." (Thwaites 1896-1901, Vol. 51:221-223).

Prior to September, 1680, the Recollet missionary, Zenobrus Membre, described the distribution of tribes (or parts of tribes) around the foot of Lake Michigan: there were Miami southeast by south of the bottom of the lake, very near an Illinois village;

> "on the western side the Kikapous and the Ainoves (Iowas), who form two villages; west of these last, above the river Chécagoumemant (Chicago), the village of the Illinois, Cascaschia, situated west of the bottom of Lake Dauphin (Michigan), a little southwest . . ." (Shea 1853:150).

Krzywicki attributes to Hennepin mention of the Kickapoo, along with the Iowa, in two villages (1934:406), but the present writer has only seen this in Membre's account as cited.

Further on in his "Narrative of the Adventures of LaSalle's Party at Fort Crevecoeur, in Illinois, Feb. 1680 to June 1681," Membre describes the Kickapoo as ". . . a little nation you may observe on the west, quite near the Winnebagoes . . . (p. 158). This would seem a bit inconsistent with his locating them near the Iowa just southwest of the foot of Lake Michigan, unless the Winnebago extended far southward in 1680 or unless the Kickapoo had these two different locations simultaneously and perhaps others for other tribal segments. Shea says that Membre also mentioned the Kickapoo as being near the Mascouten (1857:129), but the present writer has not come across this reference.

Membre narrates that on September 18, 1680, **three braves,**

whom he identifies as the advance guard of a band of Kickapoo youth out hunting — hunting Iroquois according to his interpretation — killed his fellow Recollet missionary, Gabriel de la Ribourde although they knew he was not an Iroquois. They removed his breviary and diurnal, which later came into Jesuit hands, cast his body into a hole and passed off his scalp with considerable pride as that of an Iroquois (p. 158). Chevalier Henry de Tonty, who was with Gabriel and cautioned him against "going aside to pray . . . because we were surrounded by enemies . . ." says he was taken by forty savages about 1,000 paces from the river and that they ". . . **carried him away and broke his head. . . .**" (Beckwith 1903:135). La Salle and the "Official Narrative" both state that the assassins, "themselves unperceived, **killed him with their arrows.**" They locate the scene of the "crime" as somewhere along Tonty's ascent of the Illinois River (Anderson 1901:209 and Margry 1876-86, Vol. 2:124-125). Tonty was more specific than La Salle about the place where these forty (or three) Kickapoo were hunting: the event apparently occurred in the midst of his negotiations for peace between the Iroquois and the Illinois, somewhere near Fort Crevecoeur (Lake Peoria) and Starved Rock (Beckwith 1903:135).

Membre offers no evidence for his identification of the murderers as Kickapoo, unless this was traced by means of the victim's articles to which he referred. However, all the narrators of this gory event agree on this identification, even if they do not on the manner in which he died or the number of Gabriel's slayers. Perhaps, though, "there was no opportunity for ascertaining his fate . . ." (Kellogg 1925:218).

La Salle claimed on the 23rd of November, 1680, to have passed from the Miami River (i. e. St. Joseph of Lake Michigan) to Kankakee portage six days previously and to have reached

> "the Fork of the Iroquois, where the Kickapoo, who were also at war, had recently encamped upon a hill to the number of two hundred" (Anderson, 1901:221).

La Salle's letter, more explicit than the "Official Narrative," states that this was the same group that killed the Recollet, Gabriel (Margry 1876-86, Vol. 2:127. On December 1st La-Salle reached Ft. Crevecoeur (at present-day Peoria),— rather,

its remains, — and in the wreckage noted that the huts had been rebuilt in a different way, (he is not more specific), and that it had been done by 200 camping Kickapoo a few days ahead of him (Anderson 1901:227; see also La Salle's account in Margry 1876-86, Vol. 2:130).

La Salle's twice repeated figure of 200 camping Kickapoo would represent a substantial share of the 120-300 families estimated to have been living at the Fox River Mascouten village referred to earlier. Krzywicki, who made that estimate, calls them "200 warriors" (1934:406). Of course, this figure of La Salle's is at variance with Tonty's "forty savages," and, if it be said that the latter was merely referring to the active captors, he in turn contradicted Membre who spoke of an advance guard of three braves. One could critically scrutinize La Salle's figure bearing in mind the accusation that he was falsifying the numbers of Indians who were attracted southward out of the Wisconsin area by his grouping of Gulf and Mississippi River oriented traders and Recollet missionaries (Hebberd 1890:52). The point is important for any attempt to determine which was the main body of Kickapoo, to locate them, and to understand the character of Kickapoo hunting- and war-parties.

In a "letter dated 22 August 1682 (?) at Fort Frontenac," while defending himself from charges of sending Michel Accault northward in 1680 solely to capture the Sioux trade, La Salle discusses the languages one had to know or learn while traveling north along the Mississippi. He credits Accault with understanding several Siouan languages and "Kikapou" (Margry 1876-86, Vol. 2:258). All the Siouan tribes referred to dwelled along the upper Mississippi; if La Salle was trying to justify his actions to officials who, after all, were not entirely ignorant about tribal locations in "the upper country," by alluding to the usefulness of the Kickapoo language there in 1680, some Kickapoo must have been located westward and northward of the places ascribed to them thus far.

It seems strange that such a large party of Kickapoo who were camping in the Illinois area at least from Sept. 18, 1680 through December 1st of the same year, should not have been mentioned as absent from the Fox-Wisconsin valleys by Louis

Hennepin. In late September of 1680, however, he had passed the Fox-Wisconsin portage a considerable distance en route to Green Bay and recorded:

"We passed four lakes, two pretty large, on the banks of which the Miamis formerly resided, we found Maskoutens, Kikapous, and Outaougamy there . . ." (Shea 1853: 142).

This implies that not only have these tribes occupied a former Miami site, but the Fox have apparently replaced the Miami in associating themselves with the Kickapoo and Mascouten. One is tempted to identify the "four lakes, two pretty large," with the Madison area; however, Hennepin does not say they left the Fox River after passing the portage, and in the very next paragraph he passes the Kakalin Rapids portage (at Kaukauna?) to arrive at "the bay of the Fetid" (Green Bay). One word of caution: "The truth had to be spectacular before Hennepin preferred it to the product of his own fertile imagination" (Kinietz 1940:333). Owen says that Hennepin's 1680 reference places the Kickapoo on the west side of Green Bay, while his map (published in 1698) shows them as north of Lake Winnebago. She adds: ". . . bands of their young men were wandering in the southeast in the hope of surprising small companies of their enemies, the Iroquois" (1908:324).

The Kickapoo are inexplicably absent from du Chesneau's 1681 "Memoir on the Western Indians" (O'Callaghan 1854-58, Vol. 9:160-161), wherein he lists the tribes (Sauk, Potawatomi, Winnebago, Menomini, Fox, Mascouten, Miami, and Illinois) who furnish peltries to the Indians of the area designated by Schoolcraft as:

"the summit of Lake Nepissing, north of Lake Huron . . . which cast off its waters, easterly, through the Otawas river into the St. Lawrence, and southwardly, through French river, into Lake Huron . . . the ancient Indian route of travel." (For an interesting discussion on the reasons for the extensive development of this water-route by Indian traders, see Schoolcraft 1853-57, Vol. 6:143-144).

Kellogg says that La Salle's construction of Fort St. Louis (at Starved Rock) in 1682-83 left

" . . . Central Wisconsin . . . denuded of inhabitants; the Algonquian aggregations moved into Illinois. . . . He La Salle) drew together a great group of Algonquian fam-

ilies — Illinois, Miami, Mascouten, Kickapoo from the vicinity; Abenaki and Mahican from the far east; Shawnee from the South" (1925:219-220).

Subsequent material in this paper will indicate why the writer cannot agree with Kellogg on the depopulation of central Wisconsin. A description of this crowded fort and colony of confederated tribes states that "the most westerly village was called Kikapou" (Dunn 1904:32-33). But Claude Charles le Roy Bacqueville de la potherie has the Miami, Mascouten, and Kickapoo abandoning their village near the fort on the arrival of La Salle in 1683 (?) "because they had assassinated some who were serving these (Recollet) men of Religion; they established themselves in the St. Joseph River 30 leagues away" (Bacqueville de la Potherie 1753, Vol. 2:41).

The writer has refrained from ascribing to the Kickapoo locations mentioned for other tribal names even though they may quite legitimately be associated with them; e. g. perhaps some references to the Mascouten, probably some to the Kitchigamich of Ketchigamin. (See Hodge 1907:705-706 and the Introduction to this paper.) Perhaps one reference is helpful at this point, should the quote refer to Kickapoo as "Kischigamins."

"Letter of Father Thierry Beschefer, Superior of the Missions of the Society of JESUS in Canada, Written to the Reverend Father Provincial of the province of france. Quebec, this 21st of October, 1683 . . ." (listing tribes included in the Outaouac (Ottawa) missions) ". . . We also include . . . The Outagmias and The sakkis; The Pouteouatamis along the bay des Puants, in a southwesterly direction from missilimakinak; The Makoutens and the oumiamis; the Kischigamins, along Lake Ilinois; and The Ilinois themselves, as we more nearly approach the south" (Thwaites 1896-1901, Vol. 62:191-193).

If the citation is accurate, and lacks any reference to the Kickapoo at all, it means that their associates — Miami and Mascouten (or, at least, some of these) — stayed or had moved west again, around Lake Michigan. It may also mean that La Potherie, writing in Montreal and never in the west, although generally quite accurate in his reports and resourceful in obtaining first-hand information, was too inclusive in attributing to the three tribes as a whole a movement from Fort St. Louis to the St. Joseph River. In a reference to a trip

on the part of a captured Iroquois, whose release was intended (in vain) to presage an era of peaceful relations between the western tribes and the Iroquois — this was French policy at the time — he seems to put the Kickapoo, Mascouten and Miami in association at the end of the 1670's, or even in 1682, and designates what may be their old joint village as the scene of the Iroquois' visit (Blair 1911:349-351). It seems, in any case, that **central Wisconsin was not completely denuded of inhabitants at this time.**

La Potherie ascribes to Iroquois treachery against the Shawnee and along the Chicago River against some Illinois, a slight shift in Frontenac's policy of peace with the Iroquois. When Illinois delegates come to complain, the Governor authorizes self-defense, but cautions against pursuing the Iroquois into their territory. The moral: "it is useless to make peace with the Iroquois." Frontenac was under considerable pressure from various factions of French traders, however, to promote an all-out war against the Iroquois. Upon the disruption of the truce with the Iroquois in 1682, the Kickapoo are mentioned among all the tribes who were warned and advised to stand guard against possible Iroquois aggression and to enter alliances against the Five Nations (O'Callaghan 1854-58, Vol. 9:182).

There was an acceleration in hostility to the Iroquois when Frontenac and du Chesneau were recalled and replaced by La Barre in 1682. The ecclesiasts and merchants succeeded in urging the new Governor into a course of war upon the Iroquois which they had not succeded in getting the former Administration to pursue actively. La Barre appointed M. de la Durantaye and with him M. de Lude (Duluth) to gain the allegiance of and to command the northwestern Algonquians. None of the tribes which dwelt about Lake Huron, Lake Superior, or Green Bay would accept. According to Perrot: "The envoys went among the Hurons, who accepted the tomahawk; the Ouatouas, the Kikapous, and the Sinagos refused to hear them speak" (Blair 1911:233-234). De Lude prevailed upon Perrot to win over the tribes of the area. Although Perrot had considerable success, he does not name the Kickapoo among the tribes (Winnebago, Sauk, Fox, and Menomini) to be paid for their willingness to participate in La Barre's

fiasco. Perrot says the war never came off, and subsequently La Barre was replaced by M. Jacques Brisay, Marquis de Denonville (pp. 234-238).

In 1685, en route from Green Bay westward, Perrot passed by the Miami, Mascouten and "Kikabouks." He gave them presents of tobacco and kettles, encouraging them in their desire to follow him to where he would establish himself on the upper Mississippi as a barrier to the Sioux, "because," says La Potherie, "he knew that they had hostilities with that people." However, he admonished them to make no hostile moves or the Sioux would think they have settled nearby the better to attack them (Blair 1911:363-365). After warning them to beware the Illinois' area, for the Governor had abandoned that tribe to the Iroquois, Perrot set up his fort and trading post at Lake Pepin, Minnesota (naming it St. Antoine for his new patron, Governor Antoine Lefebre Sieur de la Barre); this was after he had wintered at a temporary post at present-day Trempealeau, Wisconsin.

Entertained by some Iowa visitors, who desired to become beaver hunters, Perrot and his fellow traders

> "returned to their fort where they found a Maskoutech and a Kikabous, who informed them that the people of their villages had followed them, and that they were at a place 18 leagues above there, on the bank of the river" (p. 370).

(This river may or may not be the Mississippi; eighteen leagues above the fort could make it, alternatively, the little St. Croix.) Perrot is told that the Miami had disregarded his advice and were seduced by other Frenchmen to the Chicago area. Here they were slaughtered and partly avenged by a Miami-Mascouten-Potawatomi force; some Miami at Green Bay reportedly treated Allouez badly, naming the Jesuit priest as the instigator of that ill-fated Miami migration (p. 370; also 1912:16). Gov. La Barre, too, may have had some hand in this Chicago area exploit just prior to his recall by the French colonial authorities (Kellogg 1925:229-230 and Neill 1889:137).

Visiting the Mascouten and Kickapoo two days later, Perrot found them joyful at seeing him, asking for "possession of a river which watered a beautiful region that lay not far from the place where they were," and requesting protection

from the Sioux. Perrot hesitated with regard to their intentions and rejected their proposal that they bring a large village of Illinois whom they had persuaded to settle with them. He finally accepted their protestation of innocent intentions and granted them arms and munitions, promising to restrain the Sioux, and making them pledge to obey his orders (Blair 1911:370-372).

Perrot was then ordered by the new Governor, de Denonville, to enlist the tribes in his Western Wisconsin area for an anti-Iroquois war, but learned, on his way, that 1500 men "from the tribes of the Bay — Renards, Maskouetechs, Kikapous," were plotting to meet and plunder his Fort St. Antoine warehouse, chiefly for arms and ammunition, and then to make war against the Sioux (Kellogg 1925:232-233). La Potherie, attributing this intelligence to a Mascouten chief met by Perrot, refers to this plot as one perpetrated by the Outagami, Kickapoo, Mascouten, "and all the peoples of the bay," (Blair 1912:17). It may be that this phrasing contradicts the implication that Perrot considered the three named tribes themselves as "tribes of the Bay." That they were in the central Wisconsin area, however, seems clearly established. Hebberd (1890:62) finds the three tribes at De Pere in 1687 by confusing this plot with a later event when

> "the mission house at De Pere, in which was stored a fortune in furs, had been set on fire by malcontents and entirely consumed. Perrot was (temporarily) ruined."

However, the three tribes are not mentioned in connection with this episode (Kellogg 1925:236). Perrot broke up the plot by Hollywoodian ruses and got these tribes into the anti-Iroquois alliance.

All along Perrot's way across the country to the Bay, he "encountered some of these savages, who showed me the best roads and entertained me very hospitably" (Blair 1911:245-249). He may have arrived at Green Bay by the spring of 1686, remaining in the west that long because the frost had broken all his canoes (Draper 1868 : 111 - 112). Kellogg says he delayed in the Sioux country on one pretext or another, perhaps because of the plot to plunder his warehouse, and that he apparently didn't march east until the spring of 1687 (1925:232). Perrot states that he held con-

ferences with the tribes at the Bay in the spring of 1687 before setting out for Mackinac. At any event, his occasional encounters with "some of these savages" seems to imply that around 1686 or 1687, the Kickapoo (and Mascouten and Fox) were spread thinly throughout the area traversed by the Fox-Wisconsin "highway." It may have been that these tribes were dispersed for the winter hunting; probably Perrot started in the fall before the waterways were frozen to prevent canoe travel.

At least one contemporary observation of the Kickapoo documented this interpretation of scattered distribution in central Wisconsin during the autumn-winter hunting season Three days after passing Kakalin rapids (Kaukauna) in October, 1687, Baron Louis-Armand Lahontan:

> ". . . on the 5th arriv'd before the Village of **Kikapous,** in the Neighbourhood of which I incamp'd the next day, in order to receive Intelligence. That Village stands upon the brink of a little Lake in which the Savages fish great quantities of Pikes and Gudgeons. **I found only thirty or forty Men fit for War in the place, for the rest were gone a Beaver-hunting some days before**" (Lahontan 1905, Vol. 1: 173-174).

Kellogg places this Kickapoo village between Neenah and Menasha: "Lahontan in 1688 found a Kickapoo village on Lake Winnebago, probably at the Doty Island site," commanding the northern entrance to the Lake where a Winnebago village was observed in 1727 (1925:310 fn). Thwaites, on the other hand says:

> "The village mentioned here by Lahontan is not described by his contemporaries. It would seem to have been on Lake Winnebago, between Neenah and Oshkosh" (Lahontan 1905, Vol. 1:174 fn).

La Potherie has the Potawotomi, Menomini, and Winnebago willingly offering to go by canoe to aid against the Iroquois, and the Fox, Kickapoo, and Mascouten joining with the Miami for an overland march to the Detroit area, where they were to assemble and equip themselves)Blair 1912:16-21). Kellogg says they rendezvoused at Duluth's post on the St. Clair River (1925:235). The Fox and Mascouten were frightened out of the war by rumors from the eastern Algonkians that the French planned treachery, though Tailhan sug-

gests that the higher prices paid and better goods offered by the British traders may have caused defections from the French camp (Blair 1911:258-259 fn).

In his **History of the Five Indian Nations Depending on the Province of New York,** which Shea says was written to obtain stronger backing in England for a policy of employing the Iroquois as effective British allies in executing British designs on French possessions, Cadwallader Colden presents an English version of the same series of events and recites substantially the same tale. This is not entirely unexpected, however, for Shea points out that Colden relied "in the main on the papers of the Indian Commissioners and the French works of de la Potherie and La Hontan" (Colden 1866. Part 1:xi). In a footnote, Colden adds: "The **Outagamies, Kikabons, Malhominies,** and **Puans** live on the West side of Lake Michigan" (p. 93 fn).

The temporary commandant of the French expeditionary force, Baron de Lahontan, withdrew from the rendezvous at Duluth's St. Clair River post in 1688 to Mackinac from whence he set out in September of the same year to explore the west and report on his travels, partly with exceeding accuracy and detail, partly with a rare gift of convincing fiction after the style of Dean Jonathan Swift (Kellogg 1925:235). "I once thought he had been as far as Prairie du Chien; but think it more probable he never went beyond Green Bay," wrote Schoolcraft upon comparing Lahontan's account with his own impressions of the Fox-Wisconsin area in 1823 (1851:168). This disparagement is adequately answerd by Thwaites in the Introduction to Lahontan's **New Voyages to North America** (1905) and by Kellogg (1925: 238-240). It is difficult to see why Gale states that "La Honton . . . visited the Upper Mississippi **in 1680**" (1867:175).

In his "List of the Savage Nations of Canada," Lahontan includes the "Kikapous" under the tribes dwelling "upon the Ilinese Lake (Michigan), and the Adjacent Country" (1905: 339-342). A map in Lahontan's work (1905:156) shows "Kikapous" on Lake Michigan, approximately at the present location of Milwaukee. It is the only tribe north of the Illinois River and south of the Fox-Wisconsin waterway; the only other habitation is Fort Crevecoeur (at Lake Peoria). There

is another village, camp or habitation of "Kikapous" on the Fox River; this lies downstream from the Menomini and, in turn, a Fox habitation, all placed on the northern bank. The Mascouten are shown in southern Michigan and the Sauk are placed in the middle of the Lower Peninsula. This map is extremely inaccurate, judging from the direction of "lie" it gives to Lake Michigan and the Green Bay-Fox River waters: the former is represented as swinging directly southwest, the latter west-east, almost northwest-southeast. On Franquelin's roughly contemporaneous map of 1688, a "R. des Kicapoux" apparently represents what is today known as the Rock River, and the Kickapoo are given a settlement at its headwaters. This map is found as a frontispiece in Kellogg's **French Regime in Wisconsin and the Northwest,** and the circumstances of its preparation are very fully described in that work (1925:236-237).

From 1688 to about 1700 the record of Kickapoo history is most unclear in the works of Perrot and La Potherie, both of whom have a penchant for presenting material in a manner that defies dating and fails very often to order the events consecutively. At one point in this confusedly narrated period, La Potherie is exasperated with the actions of the Indian tribes in the area which seem anarchic and pointless (even harmful — for the French):

> "The only tribes who defended the interest of the colony in the midst of this great revolution . . . ," — **(so the French were viewing Indian actions as early as the 1690's, an important point for acculturation studies! — J S)** — "were the Nepiciriniens and the Kikabous; they marched against the Iroquois, and brought back some scalps of the latter, which they presented to the commandants at Michillimakinak" (Blair 1912:78 and Colden 1866, Part 2:1171).

In his historical summary, "Indian Tribes of Wisconsin," Shea limits himself merely to saying about this period that after the early 1680's, La Potherie " . . . alludes to them (the Kickapoo) as Allouez had done in connection with the Miamis and Mascoutenck . . ." (1857:130).

Perrot staged a taking-possession ceremony, on orders of the French premier, Seignelay, relayed by Governor de Denonville, on May 8, 1689 at Fort St. Antoine, but the present writer has no evidence that the Kickapoo were present (Kellogg

1925:241-242 and O'Callaghan 1854-58, Vol. 9:418). Perrot, both before and after this event, continued his intrigues among the Indian tribes of the area and, in particular, his attempts to gather round his base of operations a large group of Algonkian tribes.

At one point, while stressing the importance of the Iroquois war, he helps ally the Miami, Fox, Kickapoo, and many Illinois against the Sioux. Subsequently, meeting the Sioux ,he prevents this war from occurring by telling them

> "that he had come to inform them that the Miamis, the Outagamis, the Islinois, the Maskoutechs, and the Kikabous had formed an army of four thousand men to fight with them; that they were to march in three parties — one along the Mississippi, another at a day's journey farther inland. but following the river, and a third at a similar distance from the second" (Blair 1912:64-73).

Then he tells the Mascouten to settle with the Kickapoo at a place two days' journey from him near a Miami village, the better to be able to resist the Sioux should they fail to keep peace. This Miami village may possibly have been at "Maramec" (see next paragraph below) which according to Blair is an early name for the Kalamazoo River in Michigan (p. 88 fn), but which Kellogg, following J. F. Steward and, in turn, Franquelin's maps of 1684 and 1688, more recently identified near the Illinois Fox River in an extended discussion (1925:248), and possibly it was even further to the east on the St. Joseph River east of Lake Michigan where a Miami habitat is identified (p. 250). Certainly, either of the Michigan sites seems too far to the east to be "two day's journey" from Perrot, if he is at Fort St. Antoine. Indeed one wonders whether it may not have been closer to the region of present-day Merrimac, Wisconsin, though the word — an Algonkian term for a fresh-water fish — was probably applied to many sites.

The dating of these events is most confusing in La Potherie's account; the chronology is not clarified by the two parellel sources which may refer to the same events. Narrating a sequence of similar episodes, Hennepin gives the date as 1680 (Beckwith 1903:104-105) and de Beaurain as 1700 (Margry 1876-86, Vol. 6:70-73). When the Mascouten are exposed in a plot against Perrot, fear of rumored actions

against them causes them to become worried and to beg him to remain at "Maramek" to confer with them.

"Their chief came in person, with a number of warriors, and entered the cabin of the Miami chief, where a meeting was called of the more prominent men of the tribe, and of the Kikabous" (Blair 1912:88-89).

Subsequently, when all the tribes of the area are prepared to launch an attack against the Sioux (even the French consenting), the Kickapoo are reported as ready and willing to fight, although Perrot, maneuvering with characteristic adroitness to expand the alliance, tells the Miami that he had engaged the Kickapoo and Fox in order to avenge some Miami killed by the Sioux (pp. 118-119). The remainder of La Potherie's account is so hopelessly confusing that the writer has chosen to extricate only the fact that at least "15 cabins" of Kickapoo were involved in the ensuing forays (p. 123). Apparently, however, the Kickapoo tribe lost no men when sent by Perrot with the Fox to see that Miami hostilities against the Sioux were not turned against the Chippewa or Frenchmen in the area (p. 127).

In 1695, the French feared that the Fox would leave the Illinois-Wisconsin area to settle near the Wabash (possibly referring also to the Ohio), where they might effect a junction with the English and the Iroquois, and where they would probably be joined by the Mascouten and "Kekapou" (O'Callaghan 1854-58, Vol. 9:619) or "Kikabou" (Bacqueville de la Potherie 1753, Vol. 4:50). The three tribes, according to a letter from Frontenac to the King, would form a village of fourteen or fifteen hundred men — "1500 warriors," says Hebberd (1890:80) — a base very likely "attracting all other nations . . . which would be of most pernicious consequence" (O'Callaghan 1854-58, Vol. 9:619 and Beckwith 1880:156). Sometime shortly before 1698, when the Count died, Frontenac had what is described by Bacqueville de la Potherie as a pleasant interview with a Kickapoo chief apparently named "Theganissorens," who hazarded the perils of a trip all the way to Quebec on his own to pledge his devotion to the French (1753, Vol. 3:225).

Daniel Coxe, using the pre-1696 documents, travel narrations, and the like up to 1696, collected by his father, proprietor

of "the English Province of Carolana by the Spaniards call'd Florida and by the French, La Louisiana," describes a "River of the Kikapouz" sixty miles up the Wisconsin river from the Mississippi, and mentions the "Kikapouz" with part of the Fox and Mascouten as west of Lake Michigan (1741:18 and 50). This location for the Kickapoo tribe seems general enough to be acceptable.

Coxe's identification of the Kickapoo River is one of the closest in these early times to the river which bears that name today. Le Sueur, while proposing to the French King a plan designed to contain the British and, incidently, to grant himself a trade monopoly over an enormous area, located what he calls the "River of the Kikapous or river of the Pierre noire" as " . . . about thirty leagues from the lead mine" (Margry 1876-86 Vol. 6:659-61). Most authorities conclude from this that "the Kikapous" must have been the Rock River to the south. However, Coxe's Kickapoo River would also be thirty leagues from the mine, traversing this distance **northward,** up the waterway formed by the combined Mississippi and Wisconsin rivers.

The final reference to the Kickapoo which can be presented for the seventeenth century is in a letter from Julien Binneteau, S. J., to a fellow Jesuit, "From the Illinois country, (January), 1699:

> "We have three chapels, and we teach the catechism at four places. Kiabous as well as Illinois are lodged around us, in order to cultivate corn in the neighborhood of our chief village" (Thwaites 1898-1901, Vol. 65:69-71).

This was the Mission of the Immaculate Conception, located among the Kaskaskia, which Marquette had founded in 1674. James Mooney and Cyrus Thomas locate it near present-day Utica in La Salle County, Illinois, but point out that it was removed in 1700 to near the site of present-day Kaskaskia (Hodge 1907;662). Jacques Gravier makes a contemporary comment on this movement (Thwaites 1896-1901, Vol. 65:101-107). Thwaites comments upon a letter written by Gabriel Farest dated "At Cascaskias, an Illinois village, otherwise called the Immaculate Conception of the Blessed Virgin, Nov. 9, 1712 (Vol. 66:219). He adds that this was apparently the site of Fort Crevecoeur (pp. 263-264 and 279 fn), which

is at present-day Peoria. Binneteau's reference to the "Kikabous as well as Illinois" seems completely contradictory to Tailhan's footnote reference: " 'The Kikabous are the same as the Illinois,' unpublished letter of P. Binneteau, p. 1 original ms." (1864:223).

On July 13th, 1700, Le Sueur, at the mouth of the Illinios River and heading north for the Sioux country, received a letter dated July 10th from "Father Marest, S. J. . . . (at) the Mission of the Immaculate Conception of Ste-Vierge among the Illinois." (Margry 1876-86, Vol. 6:70). It is clear that this missionary was not Joseph Jean Marest, who had been with Perrot at the Sioux post in 1689, probably as chaplain, and was a witness to the taking-possession ritual at Fort St. Antoine on May 8th of that year (Kellogg 1925:172 and 241); it was, doubtless, Pierre Gabriel Marest, who was with Julien Binneteau in January, 1699 and who himself dispatched a letter on April 29, 1699 "from the Illinois country."

Le Sueur was warned to be on his guard lest he become involved in a troublesome situation arising out of a Sioux-Iowa defeat of the Piankashaw. He was further told that the "Quicapous" and part of the Mascouten, Fox, and Michigamea, (an Illinois division) were joined with the Piankashaw, whose vengeance, out of fear of the Sioux, would be turned against the Osage and Iowa (Margry 1876-86, Vol. 6:71). The version presented above of Le Sueur's itinerary, which is Chevalier de Beaurain's, is practically duplicated in the account of Bernard de la Harpe, taken from Le Sueur's journal (Shea 1861:95-96). The accounts are in part paraphrased and in part directly translated in Neill's **History of Minnesota Valley** (1882:39-40). Shea writes "Sangiestas" in place of Piankashaw and Neill makes this "Saugiestas," probably, therefore, also utilizing the de la Harpe account. Shea interprets it as an error for the "Salteaux" tribe and is following in this by the **Handbook of American Indians** (Hodge 1907: 471). The present writer, to the contrary, feels that if an error by de la Harpe is involved, it is more likely that "Sangiestas" (or "Saugiestas") was transcribed carelessly for what appears in de Beaurain's version as "Peanguichas " or something similar to it so that the proper translation would be

"Piankashaw" (and, hence, a Miami band) as Margry has made it. The report has the Kickapoo and their associated tribes ranging along the western borders of southerly Wisconsin and northerly Illinois.

On July 30th Le Sueur met five Canadians, of whom one was dangerously wounded in an attack by about ninety Fox, Sauk, Potawatomi and Winnebago who were going in nine canoes to attack the Sioux, and who inhabited the country eighty leagues to the east. Passing the Wisconsin River on September first, Le Sueur went fourteen leagues from that day to the fifth, on which day he passed by the "River aux Canots (and) then the River of the Quicapous, named thusly from the name of a nation which had formerly dwelt on its banks" (Margry 1876-86, Vol. 6:72-73). In the de la Harpe version, the second river is written "Quincapous." Shea interprets the "Aux Canots" as the Bad Axe and the "Quincapous" as the Racoon. A recent interpretation identifies the "Quincapous" with the Upper Iowa River on the basis of the distances referred to and the almost contemporaneous 1702 and 1703 maps of Guillaume de L'Isle. To use such maps as evidence is circular reasoning for de L'Isle himself based his maps on the very accounts being interpreted (Hodge 1910: 1189 and Mott 1938:307). Mott points out that maps copying de L'Isle perpetuated such location until the middle of the eighteenth century (pp. 270-271). Perhaps clearcut identification of rivers in the old accounts is a hopeless task; even the nearby Indians were inconsistent and seemingly confused. The Illinois are reported to have called the Ouabach (Ohio) "Akansea" or the same term they used at other times for the Arkansas, according to Jacques Gravier's "Journal of a Voyage from the Country of Illinois to the Mouth of the Mississippi" (Thwaites 1896-1901, Vol. 65:101-107).

Careful reading of Neill's account does **not** justify the following statements and conclusions by Mooney and Jones in the **Handbook**, which it is important to correct since it is the standard reference work for students in the field of Indian tribal ethno-histories: (1) that Neill's narrative can be attributed directly to Le Sueur; (2) that Le Sueur's voyage up the Mississippi is to be dated 1699; (3) that "Quicapous" or "Quincapous" ". . . probably refers to Kickapoo r., Crawford

co., Wis., though it empties into the Wisconsin, and not into the Mississippi," (Hodge 1907:684); (4) that Neill gets "Quincapous" from D'Iberville (1700), or, indeed, that there is any reference to the matter in p. 154 of Neill's work (p. 686).

After participating in the ratification ceremonies at Montreal in the summer of 1701 (O'Callaghan 1854-58, Vol. 9:722 and Kellogg 1925:265-266)—peace had officially been concluded with the Iroquois the year before—the Kickapoo are next heard from in connection with Pierre le Moyne Sieur d'Iberville's 1702 plan for Indian resettlement and concentration. **This plan makes overt the already long-present tug-of-war between the rival "Canadian" and "Mississippi" groupings of French mercantile imperialist interests which exerted such a pressure on the Wisconsin tribes situated at the point of greatest stress.** Writing on board the **Renomee**, on the 20th of June that year, d'Iberville urged that Le Sueur be employed to negotiate peace between the Sioux on one hand, and on the other, the Illinois, Fox, Mascouten and the Kickapoo. He added:

> "With respect to the limits of Mississippi in relation to Canada, all the rivers which flow into the Mississippi to their source and all the Nations which they bound, must depend on the Mississippi, such as the whole nation of Illinois, the Miamis from the Fork of the Illinois river, or those of Wisconsin, the Pegouaquias, the Maskoutens, the Kikapous, who may be 400 men and the other nations which I'm not acquainted with who are on the rivers" (Margry 1876-86, Vol. 4:587-592).

D'Iberville urged that direct orders be sent the commandant at Detroit absolutely prohibiting any Frenchman from trading among the Fox, the Mascouten, the Kickapoo, nor at Green Bay, nor at Chicago; that all these Indians be obliged to come to Detroit or to the Mississippi posts for their trading.

When the Illinois have been settled on the Ohio-Wabash, another D'Iberville memoir adds, their country can be occupied by the Mascouten and Kickapoo, who are 450 good **men, armed.** He speaks of the Miami, Mascouten and Kickapoo as formerly on the Mississippi. His expressed intention is to remove the Kickapoo and Mascouten "from where they now are," along the rivers flowing into the Illinois and Mississippi, hunting beaver which they sell at Green Bay and in the Illin-

ois country, and "placing them on the River of the Illinois or lower . . ." (pp. 598-599). As to the number of men assigned by D'Iberville to the Kickapoo, he accompanies his Memoire with a list—anticipating by thirty-four years, as Neill has pointed out, the census which Schoolcraft cites as the earliest for such tribes—which makes the Kickapoo-Mascouten group sound far more numerous: "Kikapous and Mascoutens, 450 **families**" (p. 599; Neill 1882:46 and Krzywicki 1934:406).

In one chapter of his "Histoire de l'Amerique Septentrionale," Bacqueville de la Potherie describes the:

> "Detail and Particular Character of all Peoples allied to New France . . . Those who live towards the south (and who) occupy a lovely country. These are Pouteouatomis, Sakys, Malhominys, Ouenebegous or Puans, Outagamis or Renards, Maskoutechs, Miamis, Kikabous, Islinois . . .," and others to the west (1753, Vol. 2:49-50).

It seems safe to assume that the list is roughly in order from north to south; therefore, it provides a general clue to the whereabouts of these tribes: the Kickapoo (and probably the Fox and Miami) are doubtless south of the first several tribes mentioned. Villages are close together, La Potherie adds: "a day's journey apart," and the construction of his paragraph implies that a tribe may have several villages, which would obivate the necessity of reconciling conflicting locations ascribed to the same tribe by different early travelers. The context makes his list sound more or less like an up-to-date summary, and La Potherie was ready to publish in about 1702.

In the following year, the Jesuit priest, Joseph Jouvency, wrote: ". . . In the beginning of this year 1703, while we are writing these things, there are numbered in this formerly **solitary and unexplored country** (Canada) more than thirty very prosperous and well-equipped Missions of our Society . . Three such citadels of religion . . have been located about the lake of the Illinois (Lake Michigan): the first among the Puteatamis (Potawatomi) and called the Mission of St. Joseph; another, among the Kikarous, Maskoutens, and Outagamis (Kickapoo, Mascouten and Fox), and possessing the name of St. Francis Xavier; the third among the Oumiamis (Miami) has the name of the Guardian Angel" (Thwaites 1896-1901, Vol. 1:221-223).

It is unclear, however, whether these missions are to be con-

sidered as active with the very same tribes through 1703, for, as Kellogg notes, the early Jesuits used the term "Mission" with some flexibility:

> "Any contact with a native tribe was considered the beginning of a mission, whether there had been any acceptance of the missionary's message, or any substantial plan for continued contact" (1925:140-141).

Hesitancy to report the actual physical dissolution of a mission, combined with this tendency to conceive of missions in spiritual terms — as opposed to the modern reader's insistence on such material elements as buildings, grounds, converts, etc. — may have perpetuated ghost-"Missions" on paper as covering a stipulated area even after the departure from that area of some of the Indian tribes listed by Jouvency. If, indeed, the Kickapoo or some Kickapoo were at the same Mission of St. Francis Xavier which was founded by Allouez in 1669 (p. 317 fn), this would place them in 1703 far north of even the most northerly of their previously reported locations on the Fox-Wisconsin waterway, specifically near De-Pere, Wisconsin.

The question may well be asked: how far were they ranging at this time? Rafinesque, citing no evidence at all, in his "Ancient Annals of Kentucky," a detailed history of Indians from glacial times to 1774, has an entry which reads: "1700. At the end of this century, (the seventeenth) . . . the Illinois, Miamis, Kicapus, &c. often crossed Kentucky to go to war against the Chicasas" (1824:38). Beckwith doubts that either the Fox or the Kickapoo followed the Mascouten, around 1700, to the Wabash trading post established by Charles Juchereau (1880:157), Kellogg dating the Juchereau fiasco from the time his contract was signed, May 13, 1703, when "he engaged . . . (a band of Mascouten) to be his hunters" and locating his post at the mouth of the Ohio River (1925: 272-273). After the French conciliation with the Sioux in 1705, Beckwith adds, all these tribes were found back in northern Illinois and southern Wisconsin (1880:157).

The **Handbook of American Indians** article on "Kickapoo" states that "a few years later (after Le Sueur's trip up the Mississippi, mentioned above) a part at least of the tribe appears to have moved south and settled somewhere about

Milwaukee," (Hodge 1907:684) but this seems a highly arbitrary selection and/or interpretation of the sources presented here. The present writer believes this to be based upon the map which accompanies Thwaites' edition of Baron Lahontan's work (1905:156) which was described as "extremely inaccurate" earlier in this paper; if there is no other reference to document this location, the writer assumes the **Handbook** to be in error here.

To thoroughly confuse the picture, a letter from the Jesuit priest, Joseph Jean Marest, dated at Michilimackinac on August 14, 1706, to Governor Pierre Rigaud de Vaudreuil, quotes an Ottawa chief is inviting the "**Kickapoos of Detroit** to return here; but they did not obey him, and now they have been killed by the Hurons" (Thwaites 1896-1901, Vol. 16: 237). This source seemingly stands alone. The only previous references to Kickapoo in the Lake St. Clair-Lake Erie region of Michigan are in the aborted rendezvous under Baron Lahontan of 1688 at Duluth's trading post and in D'Iberville's proposal of 1702 that they, with other tribes of the Wisconsin area, be forced to come to Detroit, if not to Mississippi posts, for their trading activities. Nevertheless, the presence of Kickapoo at Detroit in 1706 is by no means inconceivable, the Detroit establishment having been founded as early as 1701 and subtrial parties of Wisconsin Indians having contracted as hunters with individual French traders as was noted in the case of Juchereau's Mascouten band. Lacking any report of their previous presence at Mackinac, except in a capacity of highly transient visitors, however, the present writer cannot clarify the meaning of a request for "the Detroit Kickapoo" to **return** to Mackinac. It may, of course, refer to a return to an area of different mercantile alignment than the Detroit region.

Antoine Denis Raudot writing a "Memoir Concerning the Different Indian Nations of North America" in 1709-10, but using data very likely collected before 1702, describes the "Kicapous," Fox, Mascouten, and Winnebago, as peoples of the prairies. (Winnebago! This association of Winnebago with "the prairies" and even alone together with "prairie tribes" seems to be quite unique with this author.) "These Kicapous are almost all crippled with wounds and covered

with scars, being always at war" (Kinietz 1940:365-367 and 382-383).

"Kicapous," Fox, Mascouten, and Winnebago, as peoples

Finally, some writers see the early 1700's as a period of movement southward out of Wisconsin. Beckwith, who considered the Kickapoo and Mascouten as parts of the same tribe, discussed at length what he described as a persistent movement from the Mascouten village on the Fox River, Wisconsin, toward Indiana on the one hand, and western Illinois on the other. Although an intial date was not given for this migration out of the Fox River Valley, the author pointed out that considerably prior to 1718 "Rock River appears as Kickapoo River on contemporaneous maps . . ." (1884:119 et seq). Kellogg reasons that D'Iberville's proposed adjustment of the Mississippi valley tribes

> "to a certain extent was gradually accomplished . . . ; the Illinois in the early years of the century migrated in large numbers to the site now called the American Bottom . . . along the Mississippi below the mouth of the Illinois River . . . , (while) the Kickapoo from the Fox River valley of Wisconsin moved into the region the Illinois left unoccupied . . . , (and) the Mascouten and Potawatomi gradually shifted south and southeast around the end of Lake Michigan" (1925:271).

Continual reference to a Fox River Valley habitat for the Kickapoo in the early 1700's as if it were their exclusive location and the point of departure for all their migrations, seems again to rest on an unexplained selectivity on the parts of these writers of secondary sources from materials available in primary reports. Comparison of the several primary sources cited in this paper beginning chronologically with Binneteau in 1699 suggests that at least a major segment of Kickapoo was centered in an area comprising southeastern Wisconsin and northeastern Illinois, not far from their camping sites during the La Salle and de Tonty expeditions of 1680, and that they or other Kickapoo were ranging westward along the Mississippi River in an area from central Wisconsin to central Illinois to combat various Siouan tribes.

It would certainly seem to be established that sometime around the turn of the first decade of the eighteenth century, the Kickapoo, or a substantial portion of the tribe, settled

themselves east of Lake Michigan. A dispatch, ascribed to Gaspard Chaunegros de Lery, Chief Engineer of Canada and dated as 1712, but which refers to earlier events, has the "Mascoutins and Quiyquapous" accepting an invitation from Antoine la Mothe de Cadillac to form a village on the Detroit River and "having come thither to the number of forty families erected a fort there in the place assigned them" (Thwaites 1902:293). Hebberd puts this event in 1712 (1890:81-82), but Kellogg seems more correct in making the invitation a 1710 event, since Cadillac, whose invitation was accepted by the two tribes, was appointed Governor of Louisiana in 1710 and had to leave Detroit. Kellogg adds that the invitation was sent to

> "all the tribes then resident about Green Bay . . . The Foxes with their kindred the Sauk, and some portions of the Kickapoo and Mascouten, determined to accept the offer to migrate to their earlier homes . . ." (1925:276-277).

The last phrase is in line with Kellogg's opinion that almost all of the Wisconsin Algonkian tribes, save the Menomini, were refugees who fled from Iroquois hostilities or the fear of them. This widely held view will be discussed subsequently in this paper (last paragraphs of Part III). She goes on to add that the descendants of these

> "frightened, trembling fugitive . . . , prosperous after their long sojourn in the fertile region west of Green Bay, proud and haughty in the arrogance with which they dominated the region, moved toward Detroit like a band of conquerors . . . , (by this attitude incurring) marked hostility (from) the tribes already settled in this vicinity . . ." (p. 276).

It seems quite extraordinary that Kellogg should have overlooked or at least neglected to reconcile or dismiss the 1706 reference to the "Kickapoos of Detroit" which is cited above. She was very familiar with the works of her associate, Thwaites, intimately connected with the Wisconsin Historical Society and its publications for which she was a major researcher, and she had an extensive acquaintance with the primary sources consulted by Twaites et al.

Both Kellogg and Hebberd are put squarely behind the thesis, alluded to above, that the "normal" or primary residence of the Kickapoo was on the Fox River up through the first

decade of the eighteenth century. Indeed, every reference to the appearance of Kickapoo somewhere outside of Wisconsin is viewed by these "Badger" authors as a departure from the plush surroundings, the flesh-pots and solid comforts, of the Fox River Valley. As a result, Kellogg has the Kickapoo leave the valley for Illinois country in the early 1700's (p. 271) and then depart once again from the same Fox River Valley in Wisconsin for the Detroit area in 1710 (p. 276).

The migration of 1710 at Cadillac's invitation may have involved only a portion of each tribe, however. Actually, the Kickapoo villages, as will be seen shortly, were not established in the immediate area of Detroit, but near the mouth of the Maumee River, at or near present-day Toledo.

There is some confusion as to the nature and order of events resulting in the famous "Fox war" and "Detroit siege." Natalie Joffe stresses some of the economic aspects of the fur trade in relation to Fox-French relations as a background for this conflict (1940:282). The approach parallels, in some respects, that taken in Part III of the present paper. A similar approach has been stressed by Beckwith in citing Pierre Francois Xavier de Charlevoix, who, by 1721 or 1728, suspected Iroquois diplomacy of stirring up the Fox (1884:155-157). Indeed, the British may have been involved, as well. for they were at war with the French at the time. Mooney and Jones note that the Kickapoo "entered the plot of the Foxes in 1712 to burn the fort at Detroit," without further explanation (Hodge 1907:684); Hebberd, in a very complete discussion tries to refute Fox "guilt" and protests against French "innocence" (1890:81 et seq); De Lery (?) makes the Fox, who were settled in the Detroit area, the vanquished victims of Huron-Ottawa aggression (Thwaites 1902:294), while Kellogg has the latter aggressing against a band of Mascouten, wintering on the St. Joseph River in 1711-12, with the Fox immediately drawn in to aid the Mascouten (1925:280-282).

It is at least clear that before long the Kickapoo and Mascouten were in the thick of armed conflicts; according to de Lery (?)

"As soon as the Maskoutins and Quiyquapous of the large villages learned of this deed, (the Huron-Ottawa anti-Fox

attempt), they sent many war-parties into the field — some to La Baye, others to Detroit, and to all the routes of travel. They caused all the other nations to take to flight, as the latter did not dare to remain at the enemy's approach" (Thwaites 1902:295).

The "Official Report by Commanding Officer, Mr. Dubuisson, to Governor General of Canada, Marquis de Vaudreuil, dated Fort du Ponchartrain, June 15, 1712," says that the Kickapoo, joined by about thirty Mascouten, during the winter of 1711-12

" . . . had taken prisoners some of the Hurons and Iroquois . . . I believe that if Mr. De Vincennes had not been at the mouth of the Maumee at the time, the Kickapoos would have killed the two Hurons and the Iroquois. There was every possibility of it. Those same Indians took prisoner also, Langlois, who was on his return from the Miami country . . ." (pp. 285-286 and Beckwith 1884:119-156).

Apparently the Fox were trapped and defeated while awaiting aid from their Kickapoo allies and possibly English troops (Joffe 1940:282 and Thwaites 1902:269). Though the reports are somewhat inconsistent, the Kickapoo did not fare very well:

"We have another difficult affair, which threatens to give us much trouble. The Kickapoos, who live at the mouth of the Maumee River . . ." (writes Dubuisson on June 15, 1712, after the defeat of the Fox), "are about to make war upon us, now that our allies have left us; about thirty Mascoutins have joined them. A canoe of Kickapoos, who came here to speak to the three villages, has been defeated by the Hurons and Ottawas. Among them was a principal chief, whose head was brought to me, with the heads of three others. This was done out of resentment, (for the Kickapoos having taken Huron-Iroquois prisoners the winter before) and besides, they considered him a true Ottagamie, (—that is, the Kickapoo chief was considered as bad as a Fox . . . The Kickapoos having among them one of the Ottawa women and her children) I will endeavor to prevail upon the Ottawas and the Hurons to accommodate their difficulties with the Kickapoos, in order that our repose may not be troubled here" (pp. 285-286).

The document ascribed to De Lery describes Mascouten-Kickapoo depredations throughout the Northwest:

"This went on until Monsieur de Louvigny besieged them in their fort, where they were well entrenched; but they

were compelled by the bombs fired at them, to surrender, their lives being spared; this was granted them by Monsieur de Louvigny who wished to exterminate them" (p. 295 and Beckwith 1884:119).

Thus ended the "Fox-extermination" campaign, which, it can be observed, was certainly not directed exclusively against the Fox. Though defeated, however, the Fox were not exterminated as has been incorrectly assumed (p. 157). In a letter to Governor de Vaudreuil from the Jesuit, Joseph Marest, at Mackinac, which followed by only five days the letter of Dubuisson cited above, the statement is made: "The Fox nation is not destroyed." After describing their scattered locations, Marest says: "Their brothers, the Kickapoos, to whose villages ten families of the Mascoutins have retired, have more than a hundred good warriors . . ." He fears the getting together of all the forces he has listed. The safety of Mackinac is in peril; however, he adds, the Fox will probably flee when they hear of the Detroit defeat:

"It is certain that, in this region, there will always be cause to fear an attack, either from the savages at Detroit or at the Bay, or from the Illinois. The French, if they go, as is their custom — two men alone in a boat to make the tour of the lakes — will always be in danger; **for the Foxes, Kickapoos, and Mascoutins are found everywhere,** and they are a people without pity and without reason" (Thwaites 1902:288-289).

On July 2, 1712, perhaps continuing the same letter, Marest records the speech of an Ottawa chief who is bitterly complaining against the Detroit establishment. He speaks of the Fox, Kickapoo, Mascouten, Miami, and others, who go on foot to Detroit, in as great numbers as they wish, to buy powder and the like. Marest adds, among the rumors reaching him, the comment: "It is said that the people of Detroit are coming to make war against the Kickapoos, and that they have invited the Sauteurs to join them" (p. 292).

It would seem, then, that many Kickapoo did not reside at or even near Detroit, although they traveled there to trade in 1712. Perhaps some were still in the Fox River Valley, for the people of Detroit apparently made war on them via Mackinac. The writer has emphasized statements which may help explain the scattered distributions he has gathered and record-

ed for the Kickapoo. An attempt at analysing the reasons for their being "found everywhere" will be made in the section at the end of this part and in Part III.

Late in 1714 the acting Governor, Claude de Ramesay, reported to the Minister of Colonies that The Fox

> "have no retreat except among the mascoutins and chicapoux . . . , that if the paunts, folles avoines, sakis, and malominis have not declared themselves openly against them it is because they are the Reynars' nearest neighbors . . ." while all other tribes are against them (p. 301).

If the "Reynars" (Fox) who were neighbors of the Green Bay tribes are the same as those Fox who took refuge among the Kickapoo-Mascouten, some or all Kickapoo ("Chicapoux") were in the northerly sections of the Fox River Valley area in 1714. A month later an October letter to the French Colonial Ministry reports that Fox, Wea, Mascouten and "Kinapoux" are inviting the Iroquois to join them against the French and "Outaoua nations;" when asked for an explanation by "those who are settled at Detroit," they send a representative to Quebec and seem unlikely . . . "to make any decision for the present" (p. 310).

Governor de Vaudreuil, addressing a report to the Council of Marine on Oct. 14, 1716, tells of preparations in the fall of 1715 among the French and the Detroit Huron, Potawatomi, and

> "northern nations meeting them at Chicago . . . so that all together might go to attack 70 Cabins of Mascoutins and Quikapous, allies of the Renards, who were hunting along a certain river."

Mention of a rendezvous at Chicago may indicate that the Kickapoo - Mascouten did the previous autumn's hunting along some southern Wisconsin or northern Illinois river. On the 20th of November, 1715, a battle ensued in which more than 100 were killed, forty-seven were carried away as prisoners, "without counting the women and children." Some Fox were also defeated.

> "Monsieur de Ramezay (who conducted these expeditions) has been informed that the chief of the Quikapous came to declare to the first Frenchman whom he encountered that both His nation and that of the Mascoutins threw themselves into the arms of the Monsieur de Vaudreuil, their Father, declaring themselves his slaves, to be dispersed among what-

ever Nation he judged proper; and that Moreover, if the Renards refused to share in these Sentiments, they would deliver them up to the Kettle" (pp. 341-343).

The peace terms eventually imposed by Louis de la Porte de Louvigny included a requirement that the Fox, "by forcible or friendly means bring the Kikapous and Mascoutins, their allies and our enemies, to make peace, as they do, with all nations in general." Further, it was stipulated that they war in distant regions to capture replacements for all members of various tribes killed during the war and hunt to pay the expenses of the expedition against them.

Perrot's Memoire of around 1717 ends with a revealing "Harangue Which Ought to Have Been Made to all the Outaoua Tribes, in order to Bind Them to the Peace with the Renards and Their Allies." Perrot, a vastly successful **coureur du bois** for about thirty five years, had been maneuvering in the western Wisconsin region, largely working with and through the Fox-Kickapoo-Mascouten-Miami tribal grouping, sometimes against the Hurons, sometimes against the Iroquois and mostly against the Sioux, as the policies of different French governors and commercial interests, chiefly his own fur trade, dictated. In his "Harangue" Perrot tells the Intendant what he would have said, had he been appointed to go with de Louvigny in 1716 and 1717 among the Ottawa and other western tribes. He is most certainly not anti-Fox in his approach, reminding the Ottawa, for example, that the Miami ". . . would have killed thee if it had not been for the Renard and the Kikapou, who opposed his purpose" (Blair 1911:268). To the Mascouten he would say:

"With him (the Fox) thou hast never had war, any more than with the Kikapou, who has always dwelt in the same village with thee. Thou, Illinoets, hast never had war with the Renard, or with the Kikapou; thou didst, notwithstanding, attack him when he was at Detroit" (pp. 270-271).

Perrot concludes that had such an "harangue" been made, "all the tribes would have consented to peace." As has been indicated, however, such a pro-Fox policy was not followed by the French; De Louvigny was detailed from Montreal on the first of May, 1716, with 429 Frenchmen, in order to proceed against the Fox. He forced them to ask for peace — on conditions so onerous that he believed they would not accept

them, the terms applying to the Kickapoo and Mascouten, allies of the Fox, as well (Thwaites 1902:463-464).

In his specialized study of the relationship between wild-rice and the Indian peoples who frequented the "wild-rice district," Jenks wrote:

> "Before 1716 the Kickapoo were reported on the west side of Green Bay, while the territory occupied by them in 1716 had a Kikalin village. (Cf. Herman Moll: **A New Map of the North Parts of America Claimed by France, 1720.)** The map last cited has also 'Village of 4 Nations' near the mouth of Fox river" (1900, Part II:1055). (The implication of this seems to be that the Kickapoo were one of the four. Kikalin probably refers to Kaukauna on the Fox River.)

Mary Alicia Owen refers to the same 1720 map of Hermann Moll for evidence that they were on the west side of the Bay; she says that the map was "published before 1716" (1908:324). In this regard it seems necessary to indicate that occasional references to the early maps in such secondary sources as Owen's are presented in this paper without any attempt to analyze the context surrounding the preparation of the maps. Suffice it to say that in many cases publication dates are only useful as terminal points: the information charted may have come from writings and verbal reports on tribal positions years, even decades, prior to the making of a map and may be outdated and misleading by the time of the publication date. More extensive consultation and analysis of map information is left to future researchers.

A Memoir on the Indians of Canada as far as the Mississippi River, which is endorsed: "Furnished by Monsieur (Jacques) de Sabrevois in 1718," wherein customs and trade relations are described, summarizes the geographical position of the Wisconsin tribes. At Green Bay, Winnebago and Menomini are settled; fifteen to eighteen leagues away are the Sauk, who can understand Ottawa while the Fox cannot;

> "The Renards are eighteen Leagues from the Saquis. About fifty Leagues from the renards in the Direction of chicagou, are the mascoutins and the quicapoux, who live together on the bank of a river whose name I have forgotten. These two tribes together do not amount to two hundred men . . . The quicapoux and the mascoutins are not Far from chicagou, it may be fifty Leagues distant. When they wish to go to detroit or the St. Josephe River they have to pass by

way of chicagou" (Thwaites 1902:371-372).
poux and the mascoutins are not Far from chicagou, it may
O'Callaghan's translation differs significantly here and his version is followed by Beckwith (1880:156):

> "The Foxes are fifty leagues, **in the direction of chicagou, from** the Mascoutins and Quicapous . . . (however, O'Callaghan ends the quotation:) The Quicapous and Mascoutins are not far, perhaps fifty leagues, from Chicagous, which they must pass on their way to Detroit or to the River St. Joseph" (1854-58, Vol. 9:889-890).

Thwaite's translation, half a century later, makes no reference to O'Callaghan's and was apparently done from the Sabrevois manuscript quite independently as is indicated, additionally, by the different spellings of "Quicapoux" and of "St. Josephe."

On several grounds, Thwaites' version seems to the present writer to be more in keeping with Sabrevois' general procedure of listing tribes, roughly north to south, from Green Bay towards Chicago, each newly mentioned tribe or group of tribes being located in terms of their distance from the previously mentioned one. O'Callaghan's interpretation of the river, "the name of which I forget," as the Rock River, may be correct; however, it is conceivable that the Kickapoo-Mascouten group was as far south and east as the northern reaches of the Fox River of Illinois.

The separate locations for the Sauk and Fox and the statement that "the Sauks . . . can understand Ottawa while the Foxes can not . . ." are by no means the only references indicating that Fox and Sauk were considered absolutely separate from one another for a very long time in the early contact period. As a matter of fact, joint references to these two tribes have confronted this writer so infrequently — so much more rarely than references to both tribes separately, each in connection with contrasted groupings of tribes — as to render the universally spoken of historical quasi-identity of Sauk and Fox as very improbable.

Antoine la Mothe de Cadillac, in describing the Northwest region in 1718, seems to substantiate the view of the present writer that the striking mobility of some Wisconsin tribesmen was necessitated at least by the nature of hunting activities and trading after individually contracting traders arrived

in the area, and by the establishment of European trading settlements. (This will be discussed in Part III.) Speaking of the River St. Joseph, where there is a Miami village as well as a French garrisoned fort, he observes:

> "This post is the key to all the nations bordering on the north shore of Lake Michigan, for there is no village on the south, owing to the incursions of the Iroquois; but in the interior on the North side there are several in a Westerly direction, such as the Mascoutens, . . . Peanguiseirs, Peouarias, Kikapoux, Ayouez, Sioux, and Tintons" (Thwaites 1902:362).

The hiatus between Mascouten and "Peanguiseirs" (Piankashaw, a Miami band) appears in Thwaites; either it is a portion missing in the original document, or certain listed tribes were excluded by Thwaites as outside Wisconsin, the area of his immediate concern. It may emphasize the order in which tribes are listed to locate the Kickapoo as the Algonkian tribe furthest to the west and nearest to the trans-Mississippi Siouans. "North" and "south" sides of Lake Michigan are presumably the equivalents of "west" and "east" respectively; the positioning of the lake on many contempary maps and tribal locations in other early sources would suggest this. Cadillac's statement implies that any mention of Kickapoo east of Lake Michigan, is really a reference to more or less transitory traders, visitors, hunters, and the like. As a matter of fact, he seems cognizant only of southerly and westerly — Illinois River and Mississippi River — tribes, which would tie in with their being, according to Sabrevois, "not far from Chicago."

Governor de Vaudreuil wrote to his superiors on October 30, 1718 to report complete peace in the upper country since the anti-Fox expedition, "except among the Kikapous and the Maskoutins who have continued the war against the Illinois . . ." The Fox have remained at peace although they are allied with the former and have not fulfilled all of the peace terms imposed on them by de Louvigny. Vaudreuil explained his order to the Fox, and through them to the Kickapoo and Mascouten, that people of tribes allied to the French, still held as prisoners, be released, that captives be secured to replace tribal losses (as in de Louvigny's terms), "and that they must employ every means to prevent the Kikapou and the Mascou-

tin from continuing to make war against the Illinois . . ." Pierre Desliettes, he added, was sent among the Illinois to stay them from movements against Kickapoo and Mascouten. Vaudreuil announced the release of some prisoners held by the French, explaining:

> "I desired that they should come to get them with some Chiefs of the Kikapous and Maskoutins, and particularly the one named la Robe blanche, whom I summoned by a Collar which I gave them. (A Fox replied, 'My Father, The Kikapou and the Maskoutin have not dared to set out on the road hither for fear of being harshly received. But when they learn how You have received the Outagami,' (that is the Renard), 'they will make no difficulty about coming to submit to a Father who is so good . . .'" (pp. 377-379).

Thus, de Vaudreuil hoped his clemency would induce the Kickapoo and Mascouten chiefs to come to him to secure the release of those of their tribes held by the French.

Almost exactly one year later, Governor de Vaudreuil in-

377-379).

formed the Council (of Marine) that three deputies from the Fox tribe did come to Montreal along with a Kickapoo chief, who also represented the Mascouten. Their avowal that they had released all prisoners taken during the last war was confirmed by all the tribes who happened to be in Montreal at the time.

> "Thus all would be peaceful on this Continent but for the war which still continues between the Illinois, and the Kikapous and Mascoutins . . ."

The Fox, he added, despite their efforts to make peace by returning Illinois prisoners which the Kickapoo had given them eight different times, have now become involved in the conflict. De Vaudreuil was impressed with the professions of the Kickapoo, however, that they had not begun the war and in fact desired peace. Encouraging them to attempt the making of peace, he urged that they induce their Sauk allies to cooperate and that there be no moves against the Illinois pending negotiations.

> "But it is to be feared that their peaceful disposition may have changed, since on returning home, they learned that a band of forty Ilinois, who came to make an attack, had encountered on their way the Renards, Kikapous, and Mascoutins in the place where they were carrying on their

Summer hunting together . . . "

Not one Kickapoo (nor associate) escaped, twenty being killed and twenty made prisoners. De Vaudreuil predicted the formation of a large Kickapoo-Fox-Mascouten band to attack the enemy in his country; no peace was possible unless the officer in command of Illinois country could convince that tribe to make overtures (p. 379 and, with Kickapoo spelled "Kikapos," in O'Callaghan 1854-58, Vol. 9:893). Even in 1723, four years later, de Vaudreuil was writing to the French Minister (of Colonies) that the Fox

> "engaged in the war of the Quiquapous and Mascoutins against the Ilinois only after having been attacked by the latter . . . from 1718 up to 1719 — while that nation (i. e., Fox) was laboring to Persuade the Kicapous and Mascoutin to cease making Attacks Upon the Ilinois . . ." (Thwaites 1902:429).

Hebberd, to the contrary, assigns responsibility for this warring to the Fox, in his **History of Wisconsin.** He emphasizes how it represented an attack upon the geographical keystone of the gigantic St. Lawrence to Gulf of Mexico arch of French Empire. This anti-French attack was, for Hebberd, carried out by a great league of western tribes under Fox hegemony,

> "by the side of which Pontiac's famous confederacy, or any other ever established among Indians, seems but a trivial affair . . . , (comprehending) all the nations of Wisconsin, excepting those faithful henchmen of the French, the Chippewa. The Mascoutins and Kickapoos, as we have seen, had long been in closest union with the Foxes . . . The Pottawattamies were faithful to the French, but had now abandoned Wisconsin for Michigan" (1890:102-106).

Kellogg, also holding the Fox responsible for these conflicts, has them taking "advantage of . . . intercolonial jealousies. Their allies, the Mascouten and Kickapoo, had long been at enmity with the Illinois Indians . . ." As she points out, the country between the Wisconsin and Illinois rivers, Kickapoo-Mascouten country, was precisely that which was disputed between Louisiana and Canada (1925:304).

On November 4, 1720, in writing from Quebec about the fur trade and the value of the Wisconsin-Fox trading route, Governor de Vaudreuil alludes to "The Savages of the bay (Green Bay) who are the Renards, Kikapous, Mascoutens,

and Puans, Sakis, Pouteouatamis, Folle-avoines, and Notketz." Speaking of the extended jurisdiction granted to Louisiana, as opposed to Canada, de Vaudreuil adds that Illinois

> ". . . is at present bounded by the country which finds itself above the Illinois while ascending the Mississippi, which is that of the Kikapous and Maskoutens, which unquestionably depend upon the government of Canada . . ." (Margry 1876-86, Vol. 6:510-511).

The Marquis de Vaudreuil's "Canada-oriented" viewpoint of the Kickapoo-Mascouten-Fox country, the drainage area of the Wisconsin and Rock rivers, as properly Canadian territory is in sharp contrast with that, previously cited, of D'Iberville. D'Iberville, avowedly attempting to keep these three tribes from having trade relations with the French at Green Bay and at Chicago had insisted that "all the rivers which flow into Mississippi to their source and all the Nations which they bound . . . must depend on the Mississippi" (clearly a "Louisiana," "Mississippi," or, in de Vaudreuil's terms, "Illinois" viewpoint). That two early, mercantile power centers, both French, competed actively for the control of the southern Wisconsin-northern Illinois region helps explain why the very tribes which were located there — Kickapoo, Mascouten and Fox — should almost always be spoken of as separate from the other "Green Bay tribes." The latter — Sauk (whose separateness from the Fox is to be emphasized), Potawatomi (traditionally in this grouping, but by de Vaudreuil's time predominantly located in Lower Peninsula Michigan), Winnebago, Menomini, and Noquet — are more properly Green Bay tribes, not alone through French classificatory designation, but in their actual location. They were closely tied to the Canadian mercantile grouping, operating locally out of Green Bay.

These considerations, enlarged on in Part III, are confirmed in the works of Pierre Francois Xavier de Charlevoix, who travelled in the general area during 1720 and 1721, and whose manuscript report of the journey is dated January 20, 1723. He designates as Green Bay tribes only those tribes of de Vaudreuil's report which this writer agrees truly deserved that name (the last five tribal names, that is — Green Bay tribes — omitting the Potawatomi presumably because

they were no longer on the Wisconsin side of Lake Michigan). Charlevoix then goes on to describe the Fox River, avowedly assigning it that name from the tribe dwelling along it.

> "All this country is extremely beautiful, and that which stretches to the southward as far as the river of the Illinois is still more so; it is, however, inhabited by two small nations only, who are the **Kicapous,** and the **Mascoutins**" (1922, Vol. 1:269-271; also, with different titles, in Thwaites 1902:409 and Beckwith 1880:155).

Shea translates **"tres peu nombreuses"** as "reduced in number," a suggestion of Kickapoo depopulation prior to 1721 which does not seem warranted by other sources (1857:130); Krzywicki has accepted the version "small tribe" for 1721 (1934: 406). One journal, addressed, it would seem, from Pimiteouy (Peoria Lake), Oct. 5, 1721, praises the countryside and the rivers which flow through it. Describing the Illinois River and its tributaries, he says, "The largest of these is called **Pisticoui**, and proceeds from the fine country of the Mascoutins" (1922, Vol. 2:184). Kellogg, who edited the 1922 translation of Charlevoix, is in agreement with Beckwith's identification of the "Pisticoui" as the Fox River of Illinois, although this writer feels that her translation "Buffalo" is more probable than the latter's "Antelope" for this river.

The 1763 edition of Charlevoix's **Letters to the Dutchess of Lesdiguieres; Giving an Account of a Voyage to Canada, and Travels through the vast Country and Louisiana, to the Gulf of Mexico,** contains a map which locates the "Quicapous" tribe about half-way up the "Assenisipi R." The latter must be the Rock River; it is the only river shown on the east side of the Mississippi between the Illinois and Wisconsin. Also, it is just up the Mississippi from a "Mouingona," which sounds etymologically like the Des Moines but which Charlevoix may have applied carelessly to the Iowa River. The Mascouten are located as north of the Kickapoo, in an area which extends from considerably south to slightly north of Madison, Wisconsin, although no "Four Lakes" are shown. The Fox are shown as north of the Mascouten and the Illinois as south of the Kickapoo. The Sauk are not mapped.

It should be noted, incidentally, with regard to the Noquet

mentioned by de Vaudreuil, as with so many other "problems" for students of ethno-history in the Wisconsin area, definitive conclusions might be stated and delays for future researchers avoided if investigation of all early sources and a marshalling of the results were attemped in a systematic manner. The following quotation from Cadillac, who had been Commandant at Mackinac, would help explain why the Noquet begin to be missing from rosters of Wisconsin tribes at about this time (1720):

> "The nation of the Noquets is now degraded; so few remain that it cannot bear a distinctive name, because it is incorporated with many others" (Margry 1876-86, Vol. 5:75-132 and Thwaites 1902:360).

In his Oct. 20, 1720 communication to the Council of Marine, Governor de Vaudreuil appears understandably wary, perhaps unhappy, when asked to comment on the worth of the impending inspections of the posts in the upper country and of the fur trade in that area generally. He expresses pessimism and hesitancy with the utmost diplomacy, although there had been no openly expressed criticism of him in special inspector de Louvigny's first report five days earlier (Thwaites 1902:385-386; 390-391). De Vaudreuil says that the Kickapoo are still at war against the Illinois, threatening all tribes save the Sioux, which tribe "they for a time induced to espouse their cause . . ." but is rumored to have withdrawn from them again. They are, of course, still in league with Fox and Mascouten (p. 393).

Subsequently, instructions were sent, by order of the King, to the effect that the Fox be abandoned to the other tribes if they fail to make peace with the Illinois, and — an interesting sidelight on the extent of political interference from France at this time — if they fail to make amends to the Miami for a tribesman's murder. In his response of Oct. 6, 1721, according to the "Proceedings of the Council of Marine," de Vaudreuil indicated that the Fox, additionally, had stabbed a Frenchman, who was one of three wintering in 1720-21 among the Kickapoo, this being one of their depredations. In yet another incident the Fox captured two Potawatomi from St. Joseph River, and killed a Chippewa whom they encountered hunting at Chicago. While returning frim the Chi-

cago area to their village, the Fox handed these two Potawatomi prisoners over to the "Quicapous" and Mascouten for them to ransom.

To the King's request for further reports on a royally approved project of settling tribes on the Teatiky (Kankakee) and St. Joseph rivers, the Governor replied that some further arrivals were Potawatomi, wishing to get away from the Fox, and some Mascouten, abandoning the latter. He told these Mascouten:

> "They must bring the most notable chiefs of their nation, and also Robe Blanche, principal chief of the Kikapous, to go down to Montreal and confer with . . . (him) . . . As it is important to keep up this favorable disposition on the part of the Kikapous and mascoutins, in this matter of withdrawing to the St. Joseph river to Settle there, he has written to Sieur de Montmidy to send those two chiefs to him, and to raise no difficulties about receiving those two nations at his post, when they present themselves to settle there, provided that no objection is made by the Poutouatamis and Miamis who are established there . . . " (pp. 396-399).

One year later, de Vaudreuil reports that the Green Bay post,

> ". . . which has as its dependencies several savage nations, among which are found those of the Renards, Maskoutins, and Kikapous, which are very difficult to govern, needs a governor who has the capacity, experience, finances, and resolution and who has something of a reputation in war" (p. 522 fn).

The Governor emphasizes here a designation of administrative or quasi-political jurisdiction which some secondary sources have taken too literally and which this writer attempted to clarify above: the Kickapoo may be referred to as "Green Bay tribes" without actually dwelling at, or even close to the Bay. Secondly, he alludes to the aggressive policy of the Kickapoo-Mascouten-Fox grouping without laying bare what this writer believes to have been the situational context of their geographical and economic position which provoked their aggressiveness: the all important factors of almost complete dependency on the fur trade, of competition to become middle-men in that trade, of dominating one of the principal trade routes of the continent and of the rival pulls

from at least two major mercantile groupings, Canadian and Louisianan.

Beckwith sums up the preceding four years as follows: though defeated, the Fox were not exterminated in 1716, and they gained a strong foothold on the Rock River, Illinois, in 1718. (Locating the Fox upon Rock River is the only interpretation in Beckwith's summary for which the writer has not seen the evidence.)

> " . . . Four years later, (1722), without yielding their hold of the territory conquered in Wisconsin, they and the Kickapoos and Mascoutins had driven the last remants of the Illinois tribes south beyond the Illinois, leaving nothing to check their raids along that river, and rendering communication between the lower-Mississippi settlements and those of Canada almost impracticable" (1884:158).

On the grounds of the continual warfare between Fox-Mascouten-Kickapoo and Illinois, which presumably took place partly in northern, or at least central Illinois, the writer accepts this summary of Beckwith's. However, many Illinois had already moved southward during the early 1700's — for example, in the transplanting of Kaskaskia — and probably many more thad followed them, often marrying whites, with "mixed bloods" forming a considerable part of later lower Illinois' population.

By October 11, 1723, Governor de Vaudreuil was forced to answer multiple charge against his administration: (1) that he did not regard the affairs of the Government of Louisiana as having a claim on his assistance; (2) that he licensed the **coureur de bois** (individual, sort of boot-legging fur-traders, independent of the large mercantile interests); and (3) that he did nothing to prevent intertribal wars under his jurisdiction. Reacting defensively to the charges, the Marquis tried to rationalize away the extent of intertribal conflict, insisting with pollyannish emphasis upon the tribe **not** associated with the Fox and upon the inevitability of the alliances the latter did have:

> "The Renards, in their last fight Against the Ilinois, had with them some scioux, Mascoutins, Kicapous, puants, and Sakis; but there were no Sauteurs or folles-avoines. It is not surprising that they should have the Mascoutins and Kicapous, since the former Are at present incorpated with them,

while the Kicapous have always been their allies. As for the Puans and the sakis, it was easy to get them, because the puans are settled near them; and the village of the Sakis is only 20 Leagues from That of the renards, with whom they are closely connected. . . ." (by intermarriage, friendships, etc. p. 434).

Less than a year later, in August, 1724, he was

"not surprised that the quikapous, sakis, Mascoutins, and other nations should go on Forays against the Illinois, (or that) the consequences of that strife sometimes react upon our French . . . (These tribes) claim to have Grievances against the Illinois, because the latter detain their prisoners . . ." (p. 442).

By this time, however, the French ministry had forced de Vaudreuil to take what they hoped would be drastic action: Constant Marchand de Lignery had been sent among the tribes of the West where he made a treaty assuring peace for all, — except the Illinois Indians. This could hardly satisfy the "Louisiana" or "Illinois" mercantile grouping, and Claude Charles Dutisne, commandant at Fort Chartes, expressed his annoyance at this treaty reporting his own view of the situation and the version of an Illinois Indian. He made an accusation of performing scalp dances even on Canadian-oriented Frenchmen against the "Quikapous," the Mascouten, Fox, Sioux, "and everywhere around La bay . . . Fixe of our French have just been killed on the Ouabache; We suspect the Kikapoux" (pp. 451 and 458). The allusion in Dutisne's report to an incident along the "Ouabache," in order to be understandable to his contemporary superiors, must mean that some or all Kickapoo were still at times ranging far from their southern Wisconsin-northern Illinois territory for hunting or perhaps warring forays.

The French Ministry finally dispatched a harsh reprimand to de Vaudreuil, the rebuke being an expression of official backing for the cause of the Illinois country mercantile bloc, but the Governor died before it reached him. His successor, Charles le Moyne, baron de Longueil, threw much light on the conflict situation when he reported to the Minister of the Marine on October 31, 1725, that two Frenchmen had been killed the previous spring by "Kikapous and Renards," who ". . . said they would not let the French pass into the Sioux

country because the commerce which the French set up there would considerably diminish their own there" (Margry 1876-86, Vol. 6:543). The desire of the Fox, perhaps with Kickapoo associates, to be middlemen in the trade of the area, or, at least, to play a fur-hunting and trading role in consort with certain **coureurs des bois** licensed from Quebec, as will be seen in Part III, is felt by the present writer to be a compelling motivation which helps explain the Fox wars and those aspects of Fox culture which have elsewhere been described as "conservative" among anthropologists), or "recalcitrant," "war-like," "fierce," and the like (among historians).

By June 7, 1726, de Lignery had made a complete peace with the Fox, Sauk and Winnebago chiefs, whom he listed with the Kicapoo, Mascouten and Sioux as Fox allies (Draper 1857: 149). Plans were then made for establishing a post-fort in Sioux country. At the same time the French policy makers made preparations for an attack on the Fox, who, they knew, would be stirred into action again if it became apparent that their role as middlemen to the Sioux, Kickapoo, Mascouten, etc., was jeopardized by their agreement to de Lignery's peace. In line with this, a proposal was made to invite the war chiefs of the Sauk, Winnebago, Kickapoo, Mascouten and Sioux to come to Montreal with the Fox principal chief, after a trial one-year period of peace, to interrogate them on "the situation of affairs where they are," etc. (Kellogg 1925:318-320).

Following this interpretation of French anti-Fox policy, the present writer believes that the de Lignery expedition of 1728 against the Fox was born of French suspicion that the Fox would never consent for long to a peace that put their trading position in jeopardy. Such a view of the de Lignery expedition may be unique, but it seems to the writer to be far more satisfactory than those which "explain" French policy by stressing Fox "temperment," or those which follow the sort of immediate single-factor casual explanation found in Kellogg. The writer's interpretation of French policy and action involves a situational context, the developing situational context of the contact period where French and Indian, — Fox, Kickapoo, Mascouten, etc., and Louisiana, Canadian, individual **coureurs des bois** — were caught up in the fur-trade and

the consequent rivalries for hunting areas, trading routes and trade monopolies that so keenly affected western and southern Wisconsin and western and northern Illinois. This context will be further discussed in Part III, "The Impact of French Mercantile Capitalism."

By 1728, then, both French plans had been tried without great success. "M. de Lignery allow(ed) the Foxes to escape," the French Ministry tartly commented in a marginal note on the report of his 1728 expedition (p. 320). Partly as a result, the new Sioux-country post was abandoned, save for a few Frenchmen who did not want to jeopardize their possible trade with the Sioux.

Nevertheless, a major turning point in the Kickapoo-Mascouten relations with the Fox on the one hand and the French on the other, occurred sometime in 1727-28.

The writer believes that the circumstances surrounding the capture of a party of Frenchmen by the Kickapoo-Mascouten did not precipitate this policy, but exemplified it. This is, perhaps, best illustrated by taking, in turn, the accounts of the leader of the captive party, a Jesuit prisoner and the reactions of French Colonial officialdom. From their accounts a richer documentation of the Kickapoo situation at this crucial period is available.

Something in the entire situational context of the Kickapoo-Mascouten as it was developing around the time of Governor de Vaudreuil's death — their success as middlemen in the fur-trade along with the Fox, perhaps rivalry with the Fox, the French truces alternating with military campaigners, shifts in the balance of forces between "Canada" and "Louisiana" and the **coureur des bois** — something had failed them in their past policy sufficiently to provoke the emergence of an ostensibly anti-Fox, pro-French policy on the part of the Kickapoo-Mascouten or a sizeable and influential Kickapoo faction.

On October 3, 1728, Pierre Boucher, Sieur de Boucherville, in command of the garrison at Fort Beauharnois, left that point heading for Illinois country by way of the Mississippi. Passing traces of the Fox at the "Ayous" river, he reported seeing signs of camping places, on October 12, near "the river of the Kikapous," and a stampede of hunted ani-

mals along the shore on the 15th. On the 16th, his own two canoes were sighted and subsequently captured by some Kickapoo, whose village turned out to be on a small river three leagues from the Mississippi, the "Riviere aux Boeufs."

In discussing the locale of these events, Thwaites identifies the "Ayous" as the Wapsipinicon, the "Kikapous" as the Rock, and the "Riviere aux Boeufs" as the Skunk River, just above the Des Moines (1906:38 fns). A more recent investigator, specializing in Iowa, identifies the last-named river with the Iowa, adding that the Fox probably crossed the Mississippi in escaping the French so it must have been a western tributary to the Mississippi, despite the "R. aux Boeufs" on Bacqueville de la Potherie's map (Mott 1938:272). Neill says it is "probably" the same river mentioned by Le Sueur as 22 leagues above the Illinois and the present writer feels that both Le Sueur's and Boucher's accounts make the Des Moines River more likely than the Iowa; Neill adds that Hennepin refers to the Chippewa River as "R. aux Boeufs" (1882:54).

Careful reading of Boucher's own day-by-day "narrative" makes clear that the Kickapoo and Mascouten were extremely anxious to have good relations with the French. The manner in which Boucher's party was captured, the fact that their captors left them armed, regaled them with food, services and honors — in general, the friendliness of their Kickapoo captors — substantiate Boucher's hints as to what the Kickapoo were after. There was some division of opinion within the tribe, apparently running along the cleavage of "young men" versus "the elders," with the former desirous of friendship with the French, hostility if necessary to the Fox and good treatment for these captives. "The elders" were most critical of their captives, quarreled about the past and, when pressure from some Fox visitors ensued, they were the agents through whom the Kickapoo and Mascouten were to be induced to follow Fox policy, to plot against the Jesuit priest captive, to deliver over the prisoners to the Fox, etc.

At one point during the captivity, the elders spoke to the Jesuit captive, Michel Guignas, who was later to write per-

haps the most exaggerated horror story among the many accounts of this incident:

> " 'You, **Black gowns** used formerly to maintain peace amongst the nations; but now you are greatly changed. Not long ago one of your comrades was seen leading a party and waging a bloody war against us.' "

But even complaints which insisted not upon war and bloodshed, but peace, were hushed by the younger men of the tribe. The only exception to the soft, conciliatory policy of the Kickapoo towards their captives, was a temporary and, at that, self-imposed ban on Louis Ignatius Guignas' reading of his breviary; the Indians had discussed the rubrics printed in red ink as indicative of danger — red was used among them to signal hostility and the like — and Guignas prevented their suspicions from becoming grounds for angry action by closing his book. However, even this "harsh treatment" was abandoned seven days later when a chief reminded his tribe that " 'amongst all nations these Fathers have full liberty to pray in their own manner.' "

Presents were offered to placate the captives at the time of refusing the latter's request to be released (also accompanied by presents). On this occasion one Kickapoo spoke of the recent flight of the Fox before the French who had burned their cabins and ravished their fields.

> " 'We (Kickapoo) were warned to withdraw to the banks of the Mississippi because our father Onontio (the Governor) is angry with us, and because all the nations that winter in our neighborhood will soon fall upon us.' "

He explained that the Frenchmen were being held as hostages and should prepare to spend the winter with the tribe. But the Kickapoo acknowledged the fact that they would be held accountable for the safe-keeping of Boucher and his party, an admission which came several days **before** the escape of three members of Boucher's party, the Montbruns.

Fox pressure to deliver the French prisoners into their hands and to carry out Fox anti-French policy in general, at times was repulsed by outright refusal on the part of the captors and at other times was met by efforts to win the Fox over with bribes. During this period the Kickapoo, Mascouten and their captives took refuge on a nearby island, scattered skir-

mishes ensuing between the Fox and their erstwhile allies, largely in the form of attacks on isolated winter hunting parties. A factional split within the Fox tribe developed (or an already existent one widened), while the French captives themselves did their best to fan the fires of intertribal hostility. At length, the Kickapoo asked:

> " 'What are we to do in the present predicament? We are between two fires; the Renard has killed us, the Illinois has killed us. The Frenchman is angry with us. What are we to do?' "

Boucher convinced them of the wisdom of attempting to make peace with the Illinois, a task he volunteered to aid in, and on December 27, 1728, a delegation set out, arriving at Peouria (twenty leagues from the Mississippi) nine days later. Matters were arranged so successfully that within a short time preparations had been made for joint expeditions against the Fox by the Illinois and the Kickapoo and Mascouten, former allies of the Fox. At this time, says Boucher, "It is estimated that there are about 200 men amongst the Kikapous . . ."

Boucher's account ends with the following testimonial:

> "We, the undersigned, who have been witnesses of all that is mentioned in this relation, certify that it is accurate and true and that we owe our lives to the author through his labors, fatigues, and experience.
>
> "In testimony whereof, we have signed . . ." (and there follow the names of two interpreters, a blacksmith, a carpenter, a militia captain, and a **voyageur**) (Thwaites 1906: 37-57).

One would think that Boucher might have been tempted to exaggerate the hardships of threatened dangers of the captivity, especially since he subsequently submitted to the colonial officials a memorial, on the basis of which he expected to be reimbursed for his expenses. There is even a hint that the Crown should pay him a one hundred percent profit, for next to the total value of his present according to "prices in Montreal," there is a column headed "profit at one hundred per cent: 2862 livres." However, he does not dwell on Kickapoo "cruelty" in his narrative account or in the memoir accompanying this bill (pp. 82-86 and Neill 1882:54-55).

Good treatment of the captives — indeed, the Kickapoo rupture with the Fox as well — has been attributed in some ac-

counts to a phenomenal persuasiveness and sagacity on the part of the Jesuit, Guignas. His "feat" has been enhanced by lurid tales of Kickapoo cruelty during the earlier stages of the captivity. The writer does not have Guignas' own account to compare with that of Boucher. However, his fellow Jesuit. Mathurin le Petit, in a long letter to the Procurator of all missions in North America, sent from New Orleans on July 12, 1730, suggested exactly this when he explained that the Fox no longer

> "dare to undertake anything, since Father Guignas has detached from their alliance the Tribes of the Kikapous and the Maskoutins. On the 15th of October in the year 1728, he was arrested when halfway, by the Kikapous and the Maskoutins. For five months he was a captive among these Savages, where he had much to suffer and everything to fear. The time at last came when he was to be burned alive, and he prepared himself to finish his life in this horrible torment, when he was adopted by an old man, whose family saved his life, and procured him his liberty" (Thwaites 1896-1901, Vol. 68:207-209).

This version may have influenced an official account of September, 1730, which attributes ta Guignas the fact that the Kickapoo were won over from handing their captives to the Fox (Thwaites 1906:110), although almost all other accounts of the incident ascribe this to Boucher himself. Beckwith writes merely that Guignas was saved by an old man's adopting him as a son (1884:118) and Neill follows this general line (1882:54-55). Shea, never critical of Jesuit accounts, writes:

> ". . . Father Guignas, in attempting to reach the Illinois country, fell into the hands of the Mascoutens and Kickapoos, who sided with the Foxes, and remained a prisoner for five months, narrowly escaping a death by torture at the stake . . ." (1861:175 fn).

Hebberd follows this version, but adds, with shrewd intuition that:

> "According to his own account . . . (Guignas) finally so ingratiated himself with the savages that they released him. . . . Probably more potent reasons than the wheedling of the Jesuit influenced the Mascoutens" (1890:127-128).

The first account of the incident by Governor Charles de la Boische de Beauharnois was written on March 24, 1729,

by which time the captives had returned to Illinois country. He tells of their capture by "Quicapoux" and "Maskoutins" who were on a hunting expedition and suggests that their captors may have intended to use them as a sacrifice in an effort to make peace with "their former allies," the Fox, with whom they had quarrelled in 1727. He mentions the escape of three French captives without making any suggestion that this affected Kickapoo policy with regard to the captivity or their treatment of the captives, and optimistically presumes that the Fox will take advantage of the opportunity to make peace with the French (Thwaites 1906:58-59). His analysis is seconded by Boucher's uncle through marriage, the acting Intendant in Canada, Pierre-Noel la Gardeur, Sieur de Tilly (p. 59).

Less than two months later, the Governor is giving a different slant on Kickapoo intentions. On May 16, 1729, Beauharnois reports to the French Minister that, according to a letter from Guignas received the previous day, the escape of the Montbruns prevented the delivery of their comrades to the Fox and led to unexpectedly kind treatment. Slightly inconsistent with his March report on quarrels in **1727** between the Fox and "their former allies," Gov. Beauharnois goes on to suggest that the **1728** de Lignery expedition against the Fox had succeeded in pressuring the Kickapoo and Mascouten out of their Fox alliance. Three days later. in a letter justifying his administration and its expenditures, this rather tentative suggestion has become a firm conviction that the de Lignery expedition was not useless.

His letters give the impression that he was attempting to prevent Court opinion in France from hardening into a judgment that his first large-scale project as Governor — the anti-Fox venture under de Lignery — had been a fiasco (pp. 60-62). the marginal note by the French Ministry cited above which blamed de Lignery for the Fox escape may be recalled in this connection.

This writer believes that Gov. Beauharnois, in order to claim that his de Lignery expedition had succeeded in detaching the Kickapoo-Mascouten from their alliance with the Fox, used Guignas' account to play up a supposed maneuver by these tribes to restore that alliance and its frustration only because

of the fortuitous escape of three captives. Kellogg seems to accept fully Beauharnois' contention:

> "Although Boucherville and Father Guignas held councils with them (their Kickapoo-Mascouten captors), probably all the French would have been massacred or surrendered to the Foxes to be tortured, had not the Montbruns succeeded in escaping" (1925:322).

The view that the escape of some captives made the Kickapoo fear that the French would be warned of the capture and of the identity of the tribes accountable for the fate of the remaining prisoners and that this fear led to hospitable treatment of the latter, is not substantiated by the material presented in Boucher's own account (the kind treatment from the start, the policy split within the tribe, the admission of responsibility for the prisoners' fates before the escape, the hesitation to satisfy Fox demands that the prisoners be handed over, etc.). Furthermore, unless the Kickapoo had planned from the very beginning to deal with the French in a friendly manner, why should another killing of captive Frenchmen, another act of hostility towards enemies, have been abandoned? At the same time, the French, in 1728, needed no escaping captives, regardless of the lurid atrocity stories some of them might spread — and up to the day of the Montbruns' escape there were no such stories to be told — to remind them that they were and had been at war with the Kickapoo.

The present writer has dwelt at some length on this incident, since the role of the Kickapoo-Mascouten towards both French and Fox was considerably changed at some point, close in time to the captivity of the Boucher party. He has felt it necessary to dispose of the temptation which has attracted some historians to explain this major situational change in such casual terms as the individual shrewdness of a few French captives or the fortuitous escape of the Montbruns. The importance of the change is signalled by the fact that Beauharnois immediately views the Fox-Kickapoo rupture as constituting a strong barrier between the Illinois country and the Fox (Thwaites 1906:60-61). Additionally, the Kickapoo defection indicates its value to the French when the Kickapoo send "orders" to the Sioux no longer to grant asylum to the Fox (p. 62). Kellogg points out that detaching the Kickapoo and Mascouten allies

from the Fox "neutralized Lignery's (military) failure" (1925: 322; see also Natalie Joffe 1940:282).

In July, 1729, Gov. Beauharnois could report that the "Quicapoux," along with Mascouten, Menomini, and Salteaux, were the objects of Fox attacks (Thwaites 1906:63). According to a letter he received from the Commandant at Detroit, Jean B. St. Ours Deschaillons, dated August 22, 1730,

> "Two quiquapoux of the river St. Joseph who Had Settled among The sasquis (Sauk), were . . . killed. This will have a very good effect because the Sasquis Are said to be excited against the renards which was far from being the case before" (pp. 101-102).

These Kickapoo may have been remnants of those of the tribe who were in that area at any time previously, such as those reported by la Potherie to have migrated there in 1683; members of any parts of the tribe which may have been dispersed after agreement with the French in 1729; individuals who had married Sauk women and followed a matrilocal principle of residence. That not all Kickapoo were dwelling at or near the River St. Joseph in 1730 will become clear shortly.

The Fox were so weakened by the defections they had suffered that they planned to take refuge with the Iroquois, however

> "some Quinkapous and Maskoutins found out their designs and notified all the French posts of Louisiana and Canada" (p. 110 and Kellogg 1925:324-325).

Then the attacks on the Fox under Robert Jean Groston de St. Ange began. The Fox were compelled to entrench themselves at le Rocher, or close by, because the Kickapoo, Mascouten and Illinois of le Rocher controlled the passes to the northeast (Thwaites 1906:110). Kellogg seems strangely unfamiliar with this September, 1730 "circumstantial account of the victory over the Foxes," made available by her colleague, Thwaites, and by the Historical Society for which she worked, in locating the battle elsewhere:

> "**All French accounts** place it from one hundred and twenty to one hundred fifty miles south-southeast of Le Rocher . . . (where) they stopped and erected on the prairies between the Illinois and the Wabash, a fort strong enough to stand a great siege, with covered passageways leading to the water of a small creek" (1925:326).

According to the letter of September 23, 1730 to Gov. Beauharnois from Nicolas Antoine Coulon de Villiers, Commandant at R. St. Joseph, four days after Mascouten runners, on August 6th, had notified the latter about the Fox migration attempt, he left with some Frenchmen, some Potawatomi, Miami and Sauk, all of that post, and was seven days getting to the battle.

> On the way, I took with me the quikapoux and maskoutins making about 300 men in all" (Thwaites 1906:115).

After a long siege, taking a severe toll on both sides, marked by hunger, desertions among some of the French allies, and a momentarily successful retreat by the Fox, only fifty to sixty Fox men escaped, these lacking guns or implements to procure sustenance.

> "The Illinois of le rocher, the Maskoutins, and quikapous Are now in pursuit of this small Remnant of fugitives" (p. 113).

There seems to have been considerable ambivalence in the attitude of the Wisconsin tribesmen, despite these indications of all-out anti-Fox activity, for the accounts speak of frequent offers of provisions to the Fox by the Indian allies of the French (pp. 112 and 116).

After some mopping-up operations on the "wretched remnants" of the Fox tribe, promises pointing to arrangements for eventual settlement of the entire question of Fox-French relations were made by the Fox chiefs who went to Montreal with Villiers.

> "Not waiting to determine whether the Foxes would keep their promise, Beauharnois secretly connived at the departure of a large war party of mission Indians (converted Iroquois), who went overland part of the way on snow shoes in order 'to eat up the Renard'" (Kellogg 1925:329).

Their reported itinerary indicates that the Kickapoo were back again in southern Wisconsin and northern Illinois, for, according to

> ". . . the account of Boishebert (serving at Detroit) to Beauharnois, dated Feb. 28, 1732 . . . (they) continued their Route as far as the Kicapous, who were frightened at first on their arrival, and made the same proposal to them that the Poutouatamis had made . . ." (that they wait until Spring to be joined in their march) (Thwaites 1906:148-149)

This may indicate some unwillingness on the part of the Kickapoo and other Indians to be a party to this treachery.

By October 15, 1732, Beauharnois was able to write the French Minister that the majority of the Fox nation had been destroyed, except that other tribes kept reviving them by sending back the captives they held. The Fox remnants kept seeking places to settle, but their erstwhile allies, ". . . The Kikapoux and Mascoutins . . . would not receive them lest they might break their word given to their Father . . ." (p. 168). Beauharnois was well able to greet some Illinois, Kickapoo and Mascouten delegates who came down the St. Lawrence to visit him at about this time, with an expression of his pleasure "that you Live together as good brothers" (pp. 169-170).

De Beauharnois' attempt to exterminate each and every last remnant of the Fox resulted in de Villiers' fiasco at Little Butte des Morts, but, far more important, in a conjunction of the Sauk with the Fox that was to last from this time on. It was brought about through the Sauk's deliberate provocation of the French by their determined hospitality towards some Fox (Kellogg 1925:331-332). A punitive expedition was deemed necessary, and Nicolas Joseph Fleurimont Des Noyelles was given command. Going overland, his force arrived among the "Ouyatanons" (Miami?) late in the winter or early in the spring of 1735, near present-day Lafayette, Indiana, according to Kellogg (p. 325) and Thwaites (1906:131 fn).

The "Relation of the Journey of the Sieur de Noyelle, Commanding the War Party against the Renards and Sakis, sent to M. the Marquis de Beauharnois" states:

> "I went to see several Kikapous who were Six Leagues from there, and asked them where the Renards might be found. They replied, laying a red calumet at my feet: 'They are in that direction' (turning round); That if I wished to obtain more positive Information about them I had only to go to Masanne; that I would find their principal village there and their People knew where the Renards dwelt. When I went to Them they told me that the Renards were not far away and that they would take me to them . . . I found among the Kikapous a Missoury chief who was about to return . . ." (p. 222).

There is some possibility that ". . . the Kickapoo guides, secretly sympathizing with their former allies, led him astray . . ." (Kellogg 1925:334). Des Noyelles apparently corrected the information he had gained from the Kickapoo with up-to-date knowledge of Fox whereabouts from prisoners captured by a joint Kickapoo-Iroquois force under two French officers (Thwaites 1906:223):

> "Without the Prisoners, we should never have seen the Renards, (who were no longer on the Wapsipinicon River, but on the Des Moines), because none of our savages knew what part of the Country They were in, and because the Kickapoua their allies who had Followed me to the number of 40 had caused Us to lengthen our journey so that we had our backs turned to them" (p. 224).

Des Noyelles casts additional doubt on Kickapoo loyalty by reporting that they "might side with the stronger, for I saw them (during the battle) on an Eminence and they looked upon us as beaten" (pp. 226-227 and Kellogg 1925:334). Furthermore, "a Kickapous who had married among the Renards" at Des Moines, and who came with a white flag to a council called by the Iroquois allies of the French, proceeded to discourage Des Noyelles' attempts to use him in inducing the Sauk to abandon the Fox by returning to Green Bay. This Kickapoo was shot two leagues from the Fox by an Iroquois who scalped him in the French commander's presence, exclaiming:

> " 'We have come to seek Enemies; here are some already found since by their conduct they are as much Renards as the others' " (Thwaites 1906:227-229).

However, in his official report of this expedition, the Intendant, Gilles Hocquart describes a seven months' trip by the party to a place about 60 leagues up the Des Moines River (near present-day Des Moines, Iowa), "**to which place they had been guided by 40 Kikapaux**" (p. 231).

Whatever the reason, Des Noyelles had little success with his "War party," and, as le Boullenger, a Jesuit missionary among the Illinois advised the French Minister, "The Court was deceived when it was informed that the Renards were destroyed" (p. 255 fn). Gov. de Beauharnois was forced to defend himself against charges of not trying hard enough to defeat the Fox and of magnifying the extent of their destruction.

He insisted that his reports merely repeated what had been written him from the upper country. Further, he claimed, ever since those reports were written, the Indians of the area have been returning all Fox captives, supplying a new Fox tribal nucleus with arms and ammunition.

> "You may imagine Monseignieur, that the Savages have their policy as we have Ours, and that they are not greatly pleased at seeing a nation destroyed, for Fear that their turn may come" (pp. 225-226).

This little summary statement by Governor de Beauharnois, despite its function as a defensive justification for an administration under attack, succinctly suggests the development of a continental or partly continental "Indian consciousness" of varying degrees of political sophistication and militancy, which might tend to replace, at different times during the contact period, the aboriginal "tribal" or at most "confederational consciousness" of the Indians. This phenomenon has, of course, features which are similar to the development of national political independence movements in the present-day colonial world. It is an aspect of culture contact in North America which needs to be further explored and which has received scant attention from anthropologists, concerned as they have been, on the one hand, with correcting ethnocentric tendencies which lump all Indians together as "Indians" and, on the other, with their individual tribal units of research interest.

In view of the periodic renewal of Fox numbers by action of the other tribes, it is not surprising that on a tribal census, written from Michilimackinac in 1736, the Fox appear with an enumeration of 100 men. After naming the Menomini, Potawatomi and "Sauk (at the Bay)" under **"Lake Michigan with dependencies,"** the author labels his next section **"Fox River"**:

> "The River of the Foxes discharges into this lake. This nation now migratory, still consists, when not separated, of one hundred men bearing arms . . . The Kickapous, formerly their allies, may be eighty men . . . The Maskoutin . . . nation is estimated as sixty men . . ." (O'Callaghan 1854-58, Vol. 9:1055 and Draper 1888:363).

O'Callaghan cites Schoolcraft as the authority for attributing this census to M. Chauvignerie. Louis Thomas Joncaire, to whom it is often ascribed, could not have authored the enumeration, being on the Ohio during 1736 and not at Michili-

mackinac. Schoolcraft refers to Kickapoo as "Kicopoux" (1853-57, Vol. 3:554) and although he combines the three "Fox River tribes," omitting any enumeration for the Mascouten, Krzywicki follows him in citing Chauvignerie for his 1736 notation, "only 80 warriors," for the Kickapoo (1934: 406). Chauvignerie's grand total, useful for purposes of comparison, if tribal percentages help compensate for inconsistencies in the identification of tribal units, is given at 15,875 for all tribes and sections of tribes connected with the Canadian Government, which apparently included at the time everything south through the Illinois (Schoolcraft 1853-57, Vol. 3:554).

The information for the fourth decade of the eighteenth century may be terminated with the pertinent section of Kellogg's distributional description of the Wisconsin tribes at about 1737:

> "The Kickapoo were on Lower Rock River and in Eastern Illinois . . . (while) the fort at La Baye became important chiefly for keeping open the communication between the Great Lakes and the Mississippi" (1925:339).

They appear to have distributed themselves somewhat further to the east as well, as will be evident below.

On the eighth of July, 1742, a conference was held between Gov. de Beauharnois and various Indian tribes, chiefly the Wea and other Miami, the Kickapoo and the Mascouten. It took place at Montreal. A "Kikapoux" chief announced his expectation of "pity" from the Governor,

> "because we have never Deviated from the Path you traced out for us. I have a Desire to leave Ouyatanons and Settle in the meadow of the Maskoutins," (he explained, displaying) "a (paper) commission of great chief of a village" (Thwaites 1906:382).

Thwaites objects to O'Callaghan's identification of this meadow as near South Bend, Indiana, without offering an alternative location. The chief announced he would not be likely ever to return due to his advanced age. Indicative of the ever-present desire for trade goods and some of the requirements — political, technological, and commercial — which accompanied their presence was his request: "We ask you for a Chief, a blacksmith, and Frenchmen to bring us what we need" De Beauharnois replied that he knew the

> "Kickapoux hast never Deviated from the road I traced

out. . . . To give thee proofs of my satisfaction, I change thy medal; and I give thee thine for thy son, that he may be recognized as a chief through that mark of distinction . . . (He gave) liberty to Settle in the meadow of the Maskoutins . . . (and) as soon as I see your fire well lighted, I will send you a Chief, a blacksmith, and Frenchmen to take you what you need" (pp. 385-386).

The Governor admonished all three tribes not to return home by way of the south side of the Lake (Ontario and Erie, presumably) "lest you should mix my milk" — (a euphimism for brandy at the time, but probably used more generally, here, as meaning all the benefits of trade, etc.) — "with that of the English . . ." and lest any accident befall his Indian visitors (p. 386). De Beauharnois, in writing to the French Minister in September, 1742, cited this admonition against passing by the Iroquois territory as evidence of the extreme care and vigilance which had to be exercised in keeping the Western Indians, particularly those who had settled in the Indian area, from diverting their trade relationships to the British (pp. 409-410).

Finally, the Marquis offered a "Collar" (a wampum necklace), to the Kickapoo and Mascouten asking that they follow his advice to the Wea "to continue to strike the Chicachas (Chickasaw) . . . ," who, it was reported, had previously attacked M. de Vincennes and the French (p. 387 and Kellogg 1925:340). It seems likely that it is this period which Rafinesque had in mind in the reference quoted considerably earlier that ". . . the Illinois, Miamis, Kicapus, Ec. often crossed Kentucky to go to war against the Chicasas" (1824:38). He puts this at the end of the seventeenth century, but no other source consulted by this writer alludes to such forays earlier than the late 1740's.

The extent of dependence upon the Europeans and the domination of the latter are indicated in the almost humiliating manner with which the Kickapoo and other tribes proclaimed their fidelity to the French and protested that they had had no part in the murder of some Frenchmen, around 1747-48 (O'Callaghan 1854-58, Vol. 10:168). Their sycophantic attitude is strikingly similar to the continual protestations of the Kickapoo who captured whites along the frontier that they were really "good Indians." This designation was

so frequently repeated that it seems to have been embodied in the general frontier parlance of the latter eighteenth century as in the **Narrative of the Captivity of William Biggs Among the Kickapoo Indians in Illinois in 1788, Written by Himself** (1922).

When the Detroit Shawnee agreed to leave the Ohio River area because they had entered the British trade orbit, — earlier they had fled from Detroit after quarrelling with the Potawatomi —

> ". . . they decided to go to the Illinois. They accordingly asked Monusieur de Vaudreuil, governor of Louisiana, to have a fort built on the Ouabache River, where they offered to gather all together and to join the Kickapous and Mascoutins, nations that had long been attached to the French . . ." (Thwaites, 1906:12).

Despite their dependence on the French, it would be oversimplifying to state that the Kickapoo had already, by 1750, attained such integregation into an imported socio-economic system that they could be equated with uneducated, impoverished or depressed whites — Bloomfield's strikingly accurate designation for most Indian tribes at the "completion" of the acculturation process in the early twentieth century. In 1752, a report by the Commander of Weaton (Ouiatanou? the same as a Ouyatonon?) on the relationship of various Indian tribes in the west to the French-British trade rivalry, then rapidly reaching a climax, stated that no reliance was to be placed on the Mascouten and that remaining neutral was the most that was to be expected from the Kickapoo (O'Callaghan 1854-58, Vol. 10:168).

Beckwith gives us a summary as follows:

> "From the data given, taken with the well-established historical fact that the Kickapoos approached the Wabash from the northwest, it is evident that, prior to 1752, they had driven the Illinois tribes from the hunting grounds lying eastward and south of the Illinois River. In this conquest they were assisted by the Sacs and Foxes, and Potawatomies, who made a common cause of warfare upon the Illinois tribes."

He does not mention the Mascouten separately since he concieves of them as part of the Kickapoo tribe. By 1752 all were involved in typical frontier warfare raids across the

Ohio River, carrying off horses as part of such activities, and were subject to retaliation raids by the westward advancing frontiersmen. This mid-eighteenth century warfare occurred mostly on "the American Bottom" (from Kaskaskia to Cahokia and vicinity) on the Illinois and Vermillion rivers and the raids by Kickapoo and other Indians were directed against those whites who were not recognized as Frenchmen 1884:119-137).

Summary of Part II

LOCATIONS: The geographical distribution of the Kickapoo throughout this early phase of Wisconsin history is reconstructed from observations made by Jesuits, soldiers, administrators, traders, and other travelers. To some extent, Kickapoo locations and their associations with other tribes are, by nature, interrelated: close association with certain tribes may justify an assumption as to the location of the Kickapoo for a designated period of time, even where the surviving accounts from the witnesses of two or three centuries ago do not attest specifically to such a location for the Kickapoo.

Although many of the references may be interpreted in terms of the season during which they were made, the data does not seem to render any striking conclusions as to a seasonal effect on tribal distributions. It might be worthwhile to call attention to the preponderance of observations dated between late June and December (about thirty-four out of forty-one dated references). However, this emphasis on the summer and fall months may reflect more upon the habits of the early French in their imperialist hinterland, than upon the culture of the Kickapoo.

Again, the fact that the Kickapoo seem more extensively distributed in the decades after 1680 than before, may not mean definitely that their earlier patterns of settlement were more sedentary, that they ranged less widely. It may reflect the fact that as French exploration and control expanded, greater numbers of articulate individuals made observations on Kickapoo hunting parties and Kickapoo villages which have come down to the present, that they or their informants penetrated ever more deeply into the entire area.

Nonetheless, rather striking trends in the cited distributions

of Kickapoo may be summarized as follows:

1. **1640-60:** A rumored tribe with "Prairie" (or "Fire") Indians for eastern neighbors and Winnebago for northern or western neighbors. Amount of tribal dispersion unknown.
2. **1660-70:** A scarcely observed tribe, always associated with at least the Fox and Mascouten, apparently not as yet in the Fox River Valley area, but rather westward or southwards, occasionally warring to the northwest. Amount of tribal dispersion unknown.
3. **1670-80:** Apparently localized around the Fox River Valley in the area that became known as "Mission of St. Jacques," dwelling with other tribes, and drawn, as they were, by Potawatomi (and Fox?) trading with white goods. Amount of tribal dispersion unknown.
4. **1680-1730:** A widely dispersed tribe. Observations recorded in this paper indicate that the tribe was reported on in very widely separated localities during this half-century at an approximate rate of one observer for every two years.

It is immediately apparent that the magnet of French trading no longer concentrated its pulling power solely at the Green Bay end of the Canada-oriented waterways. the ancient Indian trading routes of water travel. Pulls developed to the south, east, and west in the form of newly established trading posts and forts: on the Mississippi, the Illinois, the Ohio-Wabash, the St. Joseph, and the Lake St. Clair-Lake Erie region. Likewise, the presence of individual trades (**coureurs des bois**) in greater numbers stimulated bands of hunters to work out semi-contractual arrangements with them and to disperse and locate themselves accordingly. Mercantile imperialist rivalries grew up between French and British, between French and French, between French and Indian, between Indian and Indian — rivalries which left in their wake wars, dispersions, migrations, ruined tribes, and a whole gamut of tribal situations, policies and attitudes with regard to the whites. These factors particularly affected the south-central and southwestern Wisconsin tribes: Kickapoo, Mascouten, and Fox.

By and large, the Kickapoo groups who were reported on most widely during this period, seem to have been attracted by the attempts of the Fox to set themselves up as middlemen to a a bloc of western tribes in the trading of white goods and the marketing of Indian-hunted furs. (See, in addition to evidence previously presented, Neill 1889:143).

5. **1730-52:** With the events of 1728-29, the Kickapoo had deserted the Fox and in so doing were simultaneously drawn out of the Wisconsin area toward the southeast, paralleling, in their geographical location, the degree to which they increasingly became agents of French interest — in hunting, in trading, and in harassing British colonials. By the end of the period, they were ready to become what the frontier agriculturists, advancing along the Ohio-Wabash from the English colonies, regarded as "Border raiders."

ASSOCIATIONS, as co-resident tribes: Unfortunately this interesting subject cannot be exhaustively analyzed from the available data. It affords another instance of a researcher's inability to evaluate or generalize about cultural information due to the lack of negative reporting. Although no observers state specifically that they saw the Kickapoo living alone in a village, as a single tribal entity, the fact that such information was never stipulated does not, of course, constitute sufficient evidence for the generalization that the Kickapoo always dwelt with other tribes.

Notwithstanding, the impressive frequency of reports on villages and camps occupied jointly by two or more tribes — not only in the data here selected for the Kickapoo, but, it would seem, for all tribes of the Wisconsin area — denotes a striking social pattern. It was very appropriate for Perrot, in his undelivered political oration of 1717, to remind the Mascouten that they had always "lived in the same village with the Kickapoos."

The data gathered in this paper records twenty-seven statements of Kickapoo-Mascouten joint-occupancy by various observers from 1669 to 1728. Of these twenty-seven reports, seventeen mentioned the Mascouten and

Kickapoo alone, the other ten observing them with additional tribal occupants of settlements. The Miami lived with them most frequently (seven times), although this pattern obtained only up to the 1690's, and three times each, they were co-residents with groups of Illinois and Fox (not later than 1703). One report in each case intimated that Kickapoo were, for a time, the sole co-occupants of settlements also inhabited by Iowa, Illinois, Fox, Sauk, or Shawnee.

The most frequent combination of three co-resident tribes including the Kickapoo, was that which included the Miami and the Mascouten. These three tribes were five times reported as if they dwelled together without others and twice as part of a grouping with additional tribes.

ASSOCIATIONS, as co-participant tribes: The record of Kickapoo associations with other tribes in joint actions is no less clear than in joint settlements.

Out of twenty-seven such observations of Kickapoo activity in the ninety years between 1662 and 1752, twenty-three — almost all — list the Mascouten together with the Kickapoo. They are always observed to be friendly, generally as active allies. As a matter of fact, the Kickapoo are never mentioned as engaged in an activity in association with another tribe or tribes unless the Mascouten are included. There are two exceptions in the references: one is an allusion to a group of Kickapoo who, in fighting the Iroquois in 1680, may have aided some Illinois; the other mentions a rumor that Kickapoo and Fox tribesmen had killed two Frenchmen to prevent their trading with the Sioux in 1725. Neither reference specifically excludes the Mascouten.

The second most frequently mentioned associates of the Kickapoo are the Fox who are referred to eighteen times out of the twenty-seven references (between 1662 and 1726) in alliance or friendship with the Kickapoo. On all but one occasion this joint activity was trilateral — including the Mascouten as well; that occasion was the 1725 incident mentioned above, where, as has been noted, absence of a reference to the Mascouten is merely neg-

ative evidence and is, as elsewhere, inconclusive. The remaining nine references to Kickapoo-Fox associations are chronicles of the hostility and warfare between them which followed Kickapoo defection from the Fox camp, around 1728.

The whole record of Kickapoo-Fox association is doubly impressive, however, since the Sauk — today so similar to the Fox in what have been thought of as fairly rigid aspects of cultural behavior, notably language, and so often presented as ethnically and historically linked to the Fox — are mentioned only five times with the Kickapoo in the undertakings of the latter between 1640 and 1752. Only three of these references involve an association with the Fox as well and at least one of these is an action by Kickapoo and Sauk against the Fox.

The Miami (including Wea and Piankeshaw), the Illinois (including Michigamea), and the Sioux are mentioned seven times each in friendly association with the Kickapoo. The Sioux are referred to as enemies **only twice,** in contrast to oft-repeated statements of a historically **continuous hostility** between the Sioux and the Kickapoo-Mascouten-Fox group. That enmity was restricted to a short period towards the end of the 17th Century when European traders were beginning to penetrate the area of their territory. The Iowa and Osage tribes are mentioned once as friendly and one time as hostile to the Kickapoo, but these tribes seem to have been allies of the Sioux in both cases.

On the other hand, the Illinois and Miami were in hostile relations with the Kickapoo more frequently (five references in as many years, after 1718). Only the Huron-Ottawa-French and their allies are listed as enemies of the Kickapoo more times (eight) than the Illinois. The Iroquois are twice referred to as enemies. Other tribes are mentioned as either friendly or hostile to the Kickapoo in references which are too scattered to add greatly to this summary.

ASSOCIATIONS, as jointly-mentioned tribes: This category, which may be of little significance in the light it sheds on

Kickapoo activities, bears out the theme of the former ones: the Mascouten and Fox far outstrip other tribes in being mentioned in various tribal lists where Kickapoo are included, (twelve and eight times respectively out of a total of fourteen references).

Again it should be noted that the Sauk are only mentioned on three of these fourteen lists, being no more significantly associated with the Fox than, say, the Miami.

ASSOCIATIONS, SUMMARY: Altogether, then, the Kickapoo and Mascouten are almost inseparable. They are mentioned together in the data already presented in this paper at least sixty-two times out of about eighty references. With this conjunction of Wisconsin Indians, the Fox are very frequently associated — far more frequently than they are linked to their alleged relatives, the Sauk, with whom they are often supposed to have been continuously allied. The Fox are mentioned in friendly association with the Kickapoo twenty-two times, although on only four occasions is there any suggestion that they jointly occupied a settlement. The Miami and Illinois were apparently joint settlers with the Kickapoo-Mascouten at one time, but such co-residence ceased not long after the turn of the eighteenth century.

POPULATION TRENDS: The writer has carefully examined all the figures available from his research, not alone from 1640-1752, but through 1910. It is exceedingly difficult to draw conclusions from the data available.

Figures obtained are stated without standardization of units: some are given in terms of totals — "souls," "individuals," etc. — some in terms of "warriors," "hunters," or "men," and some as "families." It is, of course, impossible to assess the definition of "families" employed by each early French observer viewing members of societies characterized by composite family groupings. Furthermore, many figures are given for clusters of tribes rather than the Kickapoo alone; this difficulty is compounded by the fact that the same groups of tribes are almost never available, for purposes of comparison, in different references.

Some figures represent estimates, others are reputedly cen-

suses, but there is no indication of accuracy or completeness. Even the tabulators of such figures often neglect to mention whether they are reporting on an entire tribe or on a band, a clan, a settlement of members of a tribe, or, indeed, just on those parts of a tribe found within a circumscribed geographical area.

After 1752, the demographic picture becomes somewhat clearer, only to present new confusions again early in the nineteenth century when the Kickapoo enumerations were divided, at least, in terms of a split into northern Illinois and Wabash-Ohio segments. More recently, they have been tabulated with reference to their Mexican and U. S. segments, with the latter in turn being frequently subdivided into separate Kansas and Oklahoma groupings.

It must be remembered, as a final difficulty, that it is precisely the fluid quality of population that is of interest. In the earlier days, when wars, disease, migrations, and tribal splits were events not always carefully chronicled, it is impossible to distinguish whether what appear to be population trends actually resulted from such events or are fluctuations which merely reflect the already cited inadequate controls over demographic data.

With considerable hesitation, then, the following summary remarks are offered:

1. Mooney's estimate of 2,000 Kickapoo in 1650 seems a bit high. It is supported by guesses at the population based on Allouez' "30 large cabins" in 1669, but almost all other pertinent figures refer to more peoples than the Kickapoo alone (e. g. D'Iberville's 1701 estimate).

   Jenk's most conservative estimate of the population in his wild-rice area at any one time was 30,000 Indians. He divides this total into what he designates as the more permanent residents — Chippewa, Dakota, Menomini, Sauk and Fox, Winnebago, and Potawatomi — with 24,000, and those tribes which he, without explanation, refers to as "transients" — Kickapoo, Mascouten, Assiniboin, Huron, Ottawa, and others — totaling 6000 (1900, Vol. 2:1055).

2. If Mooney's 1650 estimate is correct, it would tend to validate figures given in 1825, 1830, and 1837, which otherwise appear quite high. Together with them, there is an inference that Kickapoo population underwent almost no change between 1650 and 1825 which would appear rather startling in view of the events chronicled in this paper. At any rate, all population changes, increases and decreases, would appear to have cancelled each other out by the end of that period. Taking Mooney's figure literally, there would be an increase of some 200 by 1825, and possibly this coincides with and accounts for the subsequent disappearance of reference to the Mascouten. couten.

   From 1825 to 1837 there would appear to be no change, but from that point on a steady decline seems evident. This decline would begin sharply, reducing the tribe below 1000 members by 1860, and then proceed more gently, leaving around 350 in 1910. It would seem, however, that the Mexican Kickapoo population is neglected in these later figures. Adding the 1910 estimate of 400 Mexican Kickapoo to these figures, the decline is modified somewhat to around 1300 and 750 Kickapoo for the years 1860 and 1910 respectively.

3. Although de Tonty and La Salle would seem to have observed only a section of the tribe out hunting along the Illinois River, a similar figure of about 100 **warriors** seems to hold with some degree of persistence as signaled at many points from 1680 to 1736. However, the figures from around 1757 to about 1824 seem to average considerably above this estimate — at around 300 warriors. It may be that this higher figure reflects a tendency to exaggerate on the part of the frontiersmen who engaged in "border warfare" with these and other Indians.

PART III

The Impact of French Mercantile Capitalism

Intending to define the cultural position of the Kickapoo, the writer was forced to ask himself: "For what period of Kickapoo history is their culture to be described?" He had examined several reference works, such as the **Handbook of American Indians North of Mexico** in which the tribal summaries fuse together items of cultural behavior observed at different times during more than three centuries of contact between the Kickapoo and literate representatives of Western civilization. If Kickapoo culture had been relatively stable through this long period of recorded observations, such an amalgamated version of "Kickapoo culture" might be justified. And, indeed, many sources do insist that the agents of French colonialism — political administrators, traders, adventurers, missionaries — caused very little change in the ways of life of the Indian tribes with which they came in contact.

As a result of research in the French and British accounts of their first hundred years of contact with the Wisconsin Kickapoo, however, it is the writer's conclusion that Kickapoo culture was profoundly altered. In fact, the introduction of Kickapoo and other Indians to certain European products, and the consequent acceleration in Indian activities of trade and of hunting for purposes of trade, provoked qualitive changes in most aspects of tribal life **well in advance of actual face-to-face contact between the Indians and the Europeans themselves.**

The Europeans, almost exclusively French in the case of the Kickapoo up through the mid-eighteenth century, were agents of an alien socio-economic system which may be characterized as "mercantile capitalism" to distinguish it from tribal society of a fundamentally "Early Neolithic" type (using the latter designation in the sense so widely popularized through the writings of V. Gordon Childe). For a considerable time, these Europeans preserved a monopoly over the manufacture and first-hand distribution of some of the principal trade-goods themselves. Indeed, certain of these trade articles, specifically the many parts of firearms — flintlocks,

lead, powder, etc. — which for seventeenth century Indians, if not for twentieth century anthropologists, were as important an influence in their lives as were horses, required rather sophisticated metallurgical and chemical skills. Only the Europeans had the technical know-how, in this period, to produce, equip, and repair these articles.

They gained prestige through this fact. Advancing in the wake of their articles of European manufacture, they travelled also in the wake of an almost sacred regard for their persons. Anthropological theoreticians, for the most part, it is fortunate, relatively unconcerned with terminological inventiveness and word-games that have little reference to empirical data, may choose to give this phenomenon a term: "indirect contact?", "pre-contact acculturation?", "advance acculturation?" What is important, however, is that the phenomenon itself exists. Guns, hatchets, hoes, knives, beads, glass, powder flasks, powder, cloth, and the like, passed from tribe to tribe, often reaching areas far from the tribes which had obtained them directly from the French, Spanish, Dutch, British, Swedish, or other European explorers and traders.

Charles Albanel, travelling to Hudson's Bay in September of 1671, the first European to head north with the possible exceptions of Radisson and Groseillers, encountered British trade-goods among tribes which had received them second-hand from intervening tribes (Thwaites 1896-1901, Vol. 56: 149-217). Samuel de Champlain wrote about the trips made by Hurons in 1603 to the lower St. Lawrence River to obtain goods about which they had heard (Biggar 1922, Vol. 1:164) and learned in 1605 how European goods from the St. Lawrence were traded from tribe to tribe down to the Massachusetts coast (pp. 338-339 and Vol. 3:384-385). Captain John Smith, in 1608, found European articles among the Susquehannah which had been traded from the St. Lawrence and Lake Ontario (Butterfield 1898:76).

In the Wisconsin-Illinois area, Marquette found that the prestige and merchandise of the European preceded him in the areas which he was the first to visit, in 1673. In addition, his account implies that certain Indian tribes were gaining an advantageous position over others through their monopoly

of specific, highly-desired European items, and that trade-rivalries and jealousies were being generated in the area (Thwaites 1896-1901, Vol. 59:117, 127, 145-149; for general commentaries on Indian trade-rivalries with respect to European articles see also the footnote by Tailhan in Blair 1911: 40-41, Felix M. Keesing's **The Menomini Indians of Wisconsin, A Study of Three Centuries of Cultural Contact and Change,** 1939, and George T. Hunt's **The Wars of the Iroquois, A Study in International Trade Relations,** 1940:16-17).

Sometimes, as Hunt points out, the very tribes that first obtained European items made a concerted effort to prevent their neighbors from gaining direct access to the Europeans, monopolizing the role of middlemen for themselves. This was, of course, the exact motive which induced some Kickapoo and Fox, according to their own admission, to murder two Frenchmen in 1725. As the French Governor, Baron de Longueil, wrote to the Minister of the Marine:

> "(They) said they would not let the French pass into the Sioux country, because the commerce which the French set up there would considerably diminish their own there" (Margry 1876-86, Vol. 6:543).

Successful efforts on the part of Indians to become middlemen in this way, however, by no means diminished the prestige of the European; rather, the prestige of things European and Europeans themselves was enhanced. Champlain was beseeched by the Hurons to make peace between them and the Algonkians, lest their trade with the French be disrupted and this work to the advantage of the Algonkians, who already had gained French friendship (Biggar 1922, Vol. 3:103).

The uniqueness and superiority of certain European trade-goods, then, accelerated ancient Indian trading activities, such as the old practice of the "Cheveaux releves" (Ottawa), described by Champlain, of gathering and preparing dry blueberries and raspberries to exchange them with other tribes for peltries, wampum, fish nets, etc. (Vol. 6:248-249). With the acceleration of intertribal trading that accompanied a flow of European merchandise in these old channels, trade rivalry and jealousy became accentuated and there was keen competition for European favor. In addition, there developed marked shifts in the emphasis given to various tribal activities: hunting for

peltries became more vital than horticultural pursuits, as Marquette observed (Thwaites 1896-1901, Vol. 59:155); in consequence, settlement patterns and tribal movements were affected.

In short, the presence of European trade-goods instituted the development of an entire situational change. This view of culture contact rejects a treatment of acculturation purely by piecemeal analysis, which reduces the process to the mere substitution of one item of culture for another, a borrowed "trait" for an aboriginal "trait."

Many anthropologists have placed great stress upon the fact that acculturation is a two-way process, and, indeed, this is a fact. The data reviewed by this writer conclusively demonstrates, however, that in the early days of contact the process was extraordinarily weighted upon the side of French (and other European) inroads on aboriginal culture. The lubricant of this process was the two-fold one of the **superiority of European manufactures** — recognizable to Indian and to European alike, and therefore a more objective evaluation than would be sheer ethnocentrism on the part of the donor society — and the perhaps more important concomitant factor of **prestige** which went to the European, probably as a result of his "superior" products, and enabled his views and habits, both deliberately and unwittingly, to recast almost every aspect of native life. By 1615, if not much earlier, Champlain makes clear, **imitation** was a frequently operative mechanism of culture change, involving the deliberate adoption of French customs and beliefs (Biggar 1922, Vol. 3:145-146).

European prestige was continually kept before the Indians by their fellow tribesmen, by the members of surrounding tribes, and by the Europeans themselves. The early French stressed the superiority of their military-political potential; Jesuits, explorers, traders, alike, constantly reminded the western and northern Indians that the French had saved them from the Iroquois, even though this may not have been a literal truth. Such allegations were made, for example, by Allouez in 1671 (Thwaites 1896-1901, Vol. 55:109-115), by Albanel in 1672 (Vol. 56:149-217), and by Marquette in 1673 (Vol. 59:117 et seq). French speeches, accompanied by suf-

ficient material evidence to make them credable, boasted of the products of the mercantile-capitalist world. Allouez introduced his Wisconsin Indian audience in 1671 to comparisons between the sizes of French vessels and Indian canoes; between the the population of the French King's total realm and the members of the tribal unit; between the wealth, palaces, etc. of the King and the material products available to the Indians (Vol. 55:109-115). Pomp, pageantry, and shows of force were invoked to underscore the lesson of like sermons at first landings, such as the much-told Wisconsin story of Nicolet's arrival at Green Bay, at taking-possession ceremonies, and other occasions of the sort.

The Indians were, themselves, by no means hesitant to express their admiration of the Europeans, boosting the latter's prestige and transmitting it from one tribe to another. Champlain cites Indian requests that the newly beheld guns be fired, their requests for alliances with the French already in 1603, and their curiosity to see the reportedly fine houses of Europeans (Biggar 1922, Vol. 2:70-73). Champlain records, too, their expressions of enchantment with the beauty of the 16th-17th century French Catholic mass and of a desire to be fully instructed in what to follow and what to avoid (Vol. 3:33-34 and 147). Hennepin, among the Sioux in 1680, records that they appropriately designated guns as "iron that has understanding" (Beckwith 1903:104-105). Bacqueville de la Potherie comments on the extraordinary importance of guns to the Indians, while narrating the adventures of Perrot (Kellogg 1917:74) and points out that intertribal wars were both initiated and terminated in the seventeenth century, in response to the advantage gained by those tribes who obtained arms from the French (Blair 1911:356-357).

Indian visitors to the French settlements became the most vociferous propagandists of such European prestige. Some even visited Europe. Champlain records the speech of one Huron enthusiast who desired all Indians to worship the same diety as the French and to follow, in general, the French mode of life. This chief added that what cannot be learned by speech, could be learned by intimate association with the French. In a burst of "optimism," quite in keeping with later

United States culture and the so-called "nineteenth century notion of progress," he remarked that if the old cannot grasp French science and trades, the young will be able to do so (Biggar 1922, Vol. 3:171). Often, French explorers making new discoveries, found that their reputation and prestige had preceded them, as Marquette noted while en route down the Mississippi. The tribes encountered were often anxious to please – and to obtain access to French trade (Thwaites 1896-1901, Vol. 59:117).

It is small wonder, then, that the French were regarded, at first contact, as somewhat in the category of sacred beings, mysterious "manitous," akin to the strange and the extraordinary of aboriginal life. Indeed, this writer is of the opinion that the Jesuits, black frocked and generally bearing no weapons, may have been regarded as akin to the **berdaches** they reported upon – set apart from the "normal" in a somewhat similar fashion. However, with regard to travelling unarmed, there is some confusion in the early accounts as to whether **berdaches** hunted and went to war. Marquette makes it appear that they did (p. 129), but Zenobrius Membre, who ascribed to them or described as their proper function an "abnormal sexual activity" said they did not hunt or go to war (Shea 1853:150-152).

There is a persistent legend, as the writer indicated above, despite the obviousness of the above points, that the French regime affected tribal culture but little. It may be true that the **same** disruption of tribal life as that which occurred under the intense colonial settlement of the Atlantic coast, with the steady advance of the homesteading frontier and an active policy of excluding Indians from lands claimed by the farming population, did not occur in lands under French control. Nevertheless, the fact that the French, in the Middle West area at any rate, did not embark on large-scale farming operations, by no means limited the extent to which tribal life was qualitatively changed.

Kellogg wrote that the Jesuits

". . . did not as a rule encourage the use of the French language. As for the introduction of French customs and habits, they set their faces against these as a flint. The sav-

ages were to be maintained in their simplicity and ignorance, only to be taught to worship the true God" (1925: 173).

To any anthropologist, whether historically oriented or a self-proclaimed antihistorical functionalist, such a statement seems inadmissable. A single trait — the worship of a Christian diety — cannot be introduced without the accompaniment of changes in the conceptual life, probably the ceremonial life, and, generally, in the social life of the peoples whose culture has been affected. **It is not a "trait" — Christian worship — that was in contact with the Indians; an individual was, or a group of individuals were, and through those individuals systems of society were in contact with one another with their concomitant systems of thought, behavior, etc.**

The point need not be left to the implicit argument of common sense. It becomes empirically explicit when the testimony of the individuals themselves is examined. Examples may be taken from several aspects of tribal life. Under the heading of **idealogy,** and specifically of those logical premises of mercantile-capitalist Europe which introduced or played upon an already existent skepticism with regard to the tribal belief system and magical practice, the following citations may be made: the debunking of magical properties assumed to be contained in the color red by Brebeuf in 1630 (Kinietz 1940: 42-43), ridicule of fishing magic in 1622-23 by Sagard (pp. 26-27), hunting magic ridiculed in 1615 by Champlain (Biggar 1922, Vol 3:85-93), Perrot convincing tribesmen that "feasts of the dead" were a "useless extravagance" in the 1680's (Bacqueville de la Potherie in Kellogg 1917:88), Champlain, in 1608, disparaging the consultation of shamans for advice (Biggar 1922, Vol. 2:88). To get French trade, the Indians must pray to God in his French Catholic version, according to Albanel in 1671-72 (Thwaites 1896-1901, Vol. 56:149-217).

In connection with changes in idealogy, a good example may be cited of the process by which contact-stimulated change in one area of culture may unwittingly provoke changes in another area of culture: Champlain was invited in 1615 to arbitrate a dispute to prevent the disruption of trade.

This is change number one: the French are ascribed a role of mediators in intertribal conflicts. In actuality, of course, this change is already the product of change through contact in another aspect of culture: trade in European goods and the fact that this trade makes it imperative to prevent certain intertribal conflicts on the one hand, while on the other provoking certain intertribal conflicts through trade rivalry. The reasoning used by Champlain with the Indians was that endangering thousands of lives and the excessive bloodshed resulting from such warfare, were not worth the satisfaction obtained from the revenge of one individual's life (Vol. 3:111). **Change number two: the French mediators introduce ideological alternatives which are in conflict with tribal notions of revenge, of kinship obligations, of prestige through warfare, of responsibility for the consequences of conflict, perhaps of the worth of individuals, etc.**

Another aspect of tribal life explicitly changed, or subjected to attempts at change, is that which may be taken under the heading of **social relationships.** It is advisable to connect these with morality and even religion — to link social organization with ideology — as did the early French. In 1622-23, Sagard is at pains to define for the Indians, whose lives he has made the subject of his concern, what is to be considered a "good" husband and a "good" wife. In so doing, he throws the weight of French prestige behind the Catholic ideal pattern of "perpetuated monogamy" and opposes plural marriage, whether "simultaneous" or "successive" (to include all variations of Huron mating patterns from frequent polygamy to highly brittle monogamous relationships) (Kinietz 1940:98). Not only must the seventeenth century French Catholic conception of God be taught, but "filthy habits," "looseness of morals," and "rude license," must be eradicated, said the missionaries accompanying Champlain in 1615 (Biggar 1922, Vol. 3:145).

Also affecting the status system and socio-political organization, were the deliberate or enforced changes through contact relating to warfare activities. Thus, women were excused from torture on complaint by Champlain in 1608 (p. 65) and, condemning torture in general, in the same year, he

was permitted to shoot an intended torture victim (Vol. 2:105).

In this connection, another interesting example is provided of the chain reaction of cultural change stimulated by interference, through culture contact, with a specific trait. Champlain expressed his annoyance, in 1615, with the alleged military inefficiency of tribal democracy and the Indians indicated that they would attempt henceforth to follow their commanders more adequately (Vol. 3:74-75). **Tribal democracy and the attainment of prestige as an individual participant in warfare were not in conflict in the pre-contact situation. The French conception of non-sportive warfare, non-ritualized conflict, designed, in this case, to eradicate the Iroquois as a threat — change one — required changes in the behavior and conceptualization of leadership — change two — and consequent further changes in the status system of warfare activities, including, perhaps, a shift in the view of individual prestige in war raids.**

The area of cultural behavior which may be designated as the **technological** side of warfare activities, was also subject to change. During a war expedition as early as 1603, Champlain advised his Indian allies to reform their battle practices by keeping a "watch," implying that French assistance would be conditional upon acceptance of such modifications (Vol. 2:82-89). The construction and use of the **cavelier** (firing turret) and the **mantalet** (movable shelter) were taught by Champlain in 1615 (Vol. 3:70). In 1615, the participant Indians were reported as greatly pleased by the new tactics which they were taught, but their failure to carry out some of these tactics was the subject of much acrimonious criticism in their presence (pp. 32 and 70). **Imitation,** of course, played its role — obviously associated with the already-mentioned factor of European **prestige** — when the Indians of the Green Bay area, in 1670, were described by Dablon as conducting musket parades, their posture and their equipment being modeled after that observed at the French garrisons, and as marching on sentry-duty (Thwaites 1896-1901, Vol. 55:185-191).

Another aspect of tribal culture subject to acculturating influence in the earliest contact period, despite the absence of

cultural disruption through intensive farming on the part of early French explorers, may be subsumed under the heading, **trade.** There is a strong hint in Champlain's commentary, that trade had been more or less communally (tribally) oriented, directed, and even controlled prior to the entry into each region of the individual European trader (pp. 164 et seq). Direct supervision and control, exercised by the latter, presumably through verbal contracts, partially disrupted the social organization of the tribes, if Keesing's view on Menomini culture change is correct (1939:118 and 208-209).

The French role as arbitrator in intertribal disputes and their policy of leaguing groups of Indian tribes against the Iroquois — both operative by the early 1600's — were based upon an Indian desire to maintain trading relations with the French rather than upon French diplomacy itself (Champlain, in Biggar 1922, Vol. 3:109). Several instances have already been cited in this paper, where this Indian goal — an ideological alternative which could not, of course, have been present in the pre-contact situation — became a wedge for the introduction of countless other alternatives in Indian behavior, in belief and in practice.

The writer has spoken of culture contact as a process taking place between human beings, not traits, between persons as represenatives of two different social systems. The **economic** behavior patterns of the French mercantile-capitalist system differed sharply from those of Indian tribal society. This difference was accompanied by ideological contrasts which, once present as alternative patterns for the Indians presaged change in their entire socio-economic system. The situation is exemplified in the complaint of some Indians on the lower St. Lawrence to Champlain, in 1611, that different treatment is accorded them by different traders. This seems to be alien to their culture. Champlain has to reply that, although it is true these traders are all of the same nation, that all are under the same King (Louis XIII), it is also true that "business is a private affair" (Vol. 2:191). Sociologists have discussed at great length the distinction between "Gemeinschaft" and "Gesellschaft," between "Societas" and "Civitas," between "Folk" and "Urban," between "sa-

cred" and "secular;" the Indians were learning to distinguish between two contrasting social systems without such terminological niceties as early as 1611.

Hennepin, in 1679, relates the story of fierce competition between two western tribes centering around their urgent need for a French blacksmith (Beckwith 1903:80). There is evidence that slavery, slave-hunts and slave-trading, particularly as carried on by the Illinois Indians, may have emerged from aboriginal adoption-after-capture patterns, through changes in verbal meaning and in social emphasis after contact with the Europeans (Marquette, in Thwaites 1896-1901, Vol. 59:127; La Potherie, in Blair 1912:36; Dunn 1904:126-127; and Hennepin, in Beckwith 1903:47). Carhiel implies this particularly with regard to female domestic servants (Thwaites 1896-1901, Vol. 65:189-259). Further changes through culture contact in tribal technology and economics may be cited, such as the lessons learned when Marquette transformed a canoe into a sailing vessel while traveling down the Mississippi (Vol. 59:143) and when he placed European prestige squarely against the practice of eating dogs (p. 123).

Perhaps one of the most dramatic and significant steps in the acculturation process, one which appears to have taken on increasing significance in an era of trade alliances, wars, blockades, and the like — one which appears in the data presented here for the Kickapoo in the conference of 1742 between various Wisconsin-Illinois tribesmen and Governor de Beauharnois — is illuminated by Champlain. Discussing his political pressure on a lower St. Lawrence River tribe, he refers to an ambitious son of the chief who had solicited the French Governor's backing to obtain a chieftainship. Henceforth, announced Champlain, when wishing to elect a new chief, it would be necessary for the tribe to gain French consent. This, he added, would give the French some control over tribal affairs (Biggar 1922, Vol. 5:61-62).

Clearly, then, it is not true that the Indians in areas claimed by the French were able to preserve their culture intact. Deliberately, and in other instances quite unknowingly, within the presence of the Europeans and without it, the acculturation

process went on, fostered by European prestige. The Europeans, their articles of manufacture, their ideas, their behavior, their entire socio-economic system, provoked changes in every phase of aboriginal life.

Of course, it would be a mistake to present the process of acculturation as if it went on without respect to aboriginal conditions. New ideas, new implements, new techniques, and new habits penetrated tribal cultures through old lines of cleavage — just as French trade followed old aboriginal trade routes — as well as through new factions generated by tribal life in the contact situation. Indeed, the dispute among the Kickapoo and Mascouten over the treatment of Pierre Boucher and his party whom they had captured in 1728, cited in Part II, reflected a split in policy which ranged one tribal faction against the other, following a cleavage in age-status on the broader issue of whether or not to maintain their anti-French alliance with the Fox and to continue supporting the latter's attempts to retain a trading monopoly in western Wisconsin. Furthermore. in employing the concept of "alternatives" to refer to various changes in Kickapoo behavior patterns throughout the early contact period, the writer has merely been expressing the particular usefulness of such classificatory schemes for behavior patterns as Linton's (1937: 271-287), Redfield's (1941:347), or Kluckhohn's (in Spier 1941:109-130), in a period of extensive acculturation.

It is in this light that the writer underlines the part played by **mutually accorded and obviously high prestige** enjoyed by one of the societies in contact. Little evidence is available today of the alternatives which were undoubtedly present in the behavior patterns of the pre-contact tribal societies; Champlain's testimony for a very early date of contact, at least, shows that alternative views were present among the Hurons concerning "the immortality of souls" (Biggar 1922, Vol. 3:163). Obviously, French prestige would give weight to certain alternatives congruent with those present in French seventeenth and eighteenth century culture, while tending to undermine others. Pre-contact skepticism regarding certain magical ideas on the part of some tribal members, would be, perhaps, reinforced by the skepticism of those miracle-men

who provided guns, kettles, hatchets. On the other hand, many instances have been cited in this paper where the contempory French culture provided alternatives not previously present in the life ways of pre-contact Indians, although these may often have involved areas of aboriginal thought and custom characterized by considerable variation.

Prestige, then, was a big factor in early acculturation. As a powerful force in Indian-European relations, however, it was not without its opposite, even at an early date. **Anti-French attitudes** were aroused through the mistreatment of Indians by traders with glaringly dubious practices, as at Green Bay in 1670 (Dablon, in Thwaites 1896-1901, Vol. 55: 185-191; also Champlain, in Biggar 1922, Vol. 2:195). Heavy-handed ridicule of indigenous customs or beliefs might provoke Indian hostility rather than skepticism and a desire to adopt French alternatives (same two references). Bacqueville de la Potherie cited a complaint by Wisconsin area Indians in 1680 blaming Perrot's skepticism for the failure of a certain prediction to come true (Kellogg 1917:79).

Even that acculturative lesson from the mercantile-capitalist world which the historical data indicates was largely learned by some Indians — cut-throat competition by territorially organized, contractually established, "political" units (an aspect of the sociologist's Gesellschaft), so alien to the community of interests based upon kinship (described, often, as the polar sociological concept, Gemeinschaft) — must have created an ambivalence in attitude towards the Europeans. The Indians contacted by Champlain for the first time in 1611 were shocked to see the French traders so hostile to one another (Biggar 1922, Vol. 2:195; also Tailhan, in Blair 1911:264 fn). It is easy to understand how such trade rivalries and the notion that "business is a private affair," how the competition between missionaries from rival religious orders, and similar conflicts among the French regional groupings and administrators, with the attempts to draw Indians in on one side or the other, must have undermined the prestige of many Europeans in order to augment that of others.

Prestige, therefore, was accompanied by hostility; awe and respect for the Europeans were parelleled by fear and even

by hatred. Furthermore, the prestige factor seems to have worn thin with time, presumably decreasing as the novelty of contact and of European goods wore off and possibly as the exploitative aspects of relations with the Europeans became more apparent, as duplicity grew more glaring, as trade rivalries grew more intense, and as the frontiers advanced to the detriment of Indian land-ownership. All this seems to be indicated in the historical data.

In view of the above, what was the situational context of the Kickapoo in Wisconsin during the first century of contact?

> "The European trade was the major circumstance of all intertribal relations in the Great Lakes area. . . . The European trade instantly divided the tribes into highly competitive groups, and the competition for trade was, or soon became, a struggle for survival. . . ." (Hunt 1940:161 and 19 respectively. For an excellent discussion, see pages 18-19).

"At the headwaters of the two great valleys of North America — the St. Lawrence and the Mississippi," Wisconsin was the vortex for streams of discovery and thorough exploration, and of value as a link in penetrating inland America (Kellogg 1919-1920:410). It was also, as the convergence of the Fox-Wisconsin rivers symbolized, an area of **competition for trade routes** as well as for trade and hunting. Like a powerful magnet, trade interests drew tribes to the Green Bay area along that water highway (see No. 3 under summary of trends on reported Kickapoo locations in Part II).

As the traders themselves came west, communal direction over hunting and trading in accordance with the aboriginal social relationships of the tribes gave way to non-consanguinely based political and economic relationships. Small groups were formed on the basis of verbal contractual arrangements with the traders. Bands of this sort ranged further and further apart, staying longer through the winter in search for better pelts, and attaching themselves to temporary or semi-permanent trading posts (see No. 4 in summary cited above).

> "The redman became dependent upon the trader for the very means of life" (p. 416).

The arts of primitive economy were lost, replaced by European-supplied clothing, implements, and weapons. Urged by

the traders' greed, the Indians rapidly killed off nearby game and drove the survivors farther into the wilderness, penetrating distant regions to secure the furs with which to purchase necessities.

The result was a vicious circle: longer hunts meant less horticulture; decreasing horticultural production involved greater dependency upon the trader; greater dependency upon the trader provoked longer hunts (p. 416). To describe Kickapoo culture in the early contact period as fundamentally aboriginal except for the adoption of a few traits and the considerable export of pelts to extra-tribal French markets would be clearly fallacious within two decades or so after they were initially contacted. Under the conditions of a rapidly self-accelerating process of acculturation such as has been described, the tribe was part of a radically different situational context by the time those members of the tribe who were babies when the French first encountered the Kickapoo had grown to adulthood.

Such a situational context could have been an ideal one for an eventual introduction or borrowing of patterns analogous to the horse complex of the Plains Indians. That this did not occur is a question worthy of investigation and the writer will discuss it briefly while taking up the generally "Prairie" nature of Kickapoo culture in Part IV. It is obvious, however, that Kickapoo closeness of relationship to the trader and the European generally could equally, perhaps more probably, have led to a status of trading-post Indian, and from this status to that of most Indians living along the advancing Western Frontier of the late eighteenth and nineteenth centuries. This did indeed occur and it accounts for the position of the Kickapoo at about the stage they were left in the historical survey presented (see No. 5 in summary cited above). As Kellogg has put it so well, the fur trade

> "was not only a commercial or an economic regime, but a system of government, a form of social life, a means of exploitation, and a stage in the development of the American frontier" (p. 416).

The situational context induced by the fur trade helps account for the extreme mobility and dispersion of the Kickapoo, presumed from the fact that they are located by different

sources in different places at the same time, or nearly the same time. It accounts for their extreme dependence upon the French; it also accounts for what at the very same time was their extreme resistance to the French, called "conservatism" by some anthropologists. It helps explain the alternations of peace and war, the shifting blocs of tribes, — dwelling together, acting together, or both — the excessive warfare, and the other features of Kickapoo history detailed and subsequently summarized in the previous part.

Explanations of tribal histories which speak of "hereditary enemies" — as the Sioux have been called with respect to the Kickapoo, Fox, Mascouten, etc. (Kellogg 1925:233) —, explanations which deal with abstracted "national characteristics" such as "conservatism," or "fierceness," "recalcitrance," or being "war-like," and similar tempermental traits — applied to the Fox to explain the early eighteenth century wars — can be demonstrated to be false if they are thought of as inherent characteristics of tribes so designated, presumably operative regardless of the situational context and indeed used to "explain" the latter. In reality, "explaining" history by traits of temperment, themselves unexplained — following the great historian Lord Acton's dictum: "When in doubt, play national characteristics" — seems to involve precisely the kind of causation and hasty generalization which social scientists, seeking social and cultural explanations of social and cultural phenomena, try to combat. (If Swedish neutrality during two World Wars is "explained" by references to the Swedes as a "peace-loving, cooperative" people, what explains their aggressiveness and military conquest of much of Europe under Charles XII during part of the very period covered in this paper? If German foreign policy is "explained" by an inherently "militaristic, conformist" nature of Germans, do similar "national characteristics" explain France's conquest of Europe under its Corsican Emperor?) A glance at the history presented indicates, for example, that the Sioux were Fox allies far more than they were "hereditary enemies" (see summary on "Associations," above).

Equally unsatisfactory in the explanation of historical French or tribal policies is the search for an immediate single-

factor cause, such as that found in Kellogg to explain the de Lignery anti-Fox expedition of 1728:

> "A lieutenant and seven soldiers, sent up the Missouri River from Fort de Chartres, was attacked and all masacred . . . Until the publication of this fact, taken from the Louisiana documents, it was not known what was the **immediate occasion** for Lignery's expedition" (p. 317).

The developing situational context of the contact period was such that French and Indian — Fox, Kickapoo, Mascouten, and Lousianan, Canadian, individual **coureur du bois** — were caught up in the fur-trade and the consequent rivalries for hunting areas, trading routes and trade monopolies, affecting most dramatically the northern half of Illinois, the southern half of Wisconsin and a fringe along the Mississippi River in both present-day States. In such a situational context, "immediate occasions" play a part to be sure; indeed, they may be shown to produce **certain** results rather than others with a high degree of probability, precisely because of the general situation which gives them significance. The situational approach has the advantage of treating inter-related factors and events in an integrated manner, without becoming anti-historical. Each event does not require a particular "immediate occasion" to explain it; it is part of an entire situational context.

The situational context of the Kickapoo during a great part of the contact period reviewed in this paper is intimately bound up with Fox-French relations. The entire picture of the relationship between the Fox and the French would be illuminated by a study paralleling the work done by Hunt for the Iroquois. But there are a few important differences between the situation of the Iroquois prior to 1690 (when Hunt's study leaves off) and that of the Wisconsin Indians in the early eighteenth century:

1 — If there ever had been a unified policy of the groups discussed, Indian or French, it was apparently no longer the case even before the eighteenth century. National policy on the part of the French was subject to the pressures of competing French interests — competing individuals and competing blocs — each with its own set of policies. Very often these conflicting or differing sub-national policies operated with

more immediacy and strength than did the proclaimed national French commercial and political programs. This was particularly true in the Wisconsin area, the ambiguously defined battleground for the chief contending French blocs, Louisianan and Canadian. Simultaneously, the Indians were more and more operating in small "proletarianized" bands, each with its own policy, often in competition with each other.

2 — Resistance to trade relations with the French accompanied an acceleration of dependence upon them. A degree of militancy appeared within some tribal or band groupings, whose militancy has often been mistaken for "conservatism." This writer regards the latter interpretation as a mistake if by "conservatism" is meant the retention of traditional, pre-contact culture patterns. The culture of the Wisconsin tribes, prior to open hostilities with the French, had already been profoundly shaken up and transformed by European contacts. Indeed, then, if any degree of "revivalism" did take place, it was of a somewhat nostalgic, faked, artificial variety — akin, perhaps, to the contemporary "folk-dancing" at highly fashionable social events in the United States which completely lacks the context, function, meaning, and often the form of the folk-dancing of an earlier day. In either case, whether the Wisconsin tribes were characterized by considerable dependency on the French or militant resistance to them, far greater was the hold of European mercantile-capitalism upon their disintegrating societies than in the era described by Hunt.

3 — In the Wisconsin area the struggle between British and French trading blocs was overshadowed by a competition between rival French mercantile groupings. Wisconsin was a keystone of the Louisiana-St. Lawrence arch, it is true. But it occupied a key position not only in a unifying sense. As mercantile interests advanced from centers established, beginning about 1680, in the Illinois country — later called Mississippi, and still later, Louisiana — an intense rivalry was directed against the Montreal interests operating locally, chiefly from Green Bay. Indian tribe went into action or was played against Indian tribe in the effort by the two rival groups to win the Wisconsin area as a trading and hunting sphere of domination.

Playing within and upon this theme was the all-important

variation of the Fox tribe, establishing or attempting to establish itself in the role of middle-man to the Sioux, the Kickapoo, the Mascouten, and other southern and western tribes. This meant temporary attachments with either of the two rival French blocs or with the Fox, but most often independent and individual arrangements with the hundreds of **coureurs des bois,** throughout the area, operating with the covert assistance of some colonial officials.

On this background only, can be understood the migrations, the settlements, the breaking up of tribes into segments and the forming of leagues, the bickerings of French officials, the rebukes administered to governors and minor officials, the eternal apologies for not destroying the Fox offered by those who were secretly working with the **coueurs des bois,** etc. Here then is the key to the historical data presented in this paper.

The writer feels that perhaps the presence of the European preserved a tribal name, such as "Kickapoo," for widely separated bands, where in the pre-literate period persistent separation would have given rise to the formation of what would later be known as separate tribes. This fact, itself, may help account for the difficulty of locating a consistent tribal unit in a consistent locality, or following, as a single unit, a consistent course of migration. Thus, whereas in **activity** European contact was splitting tribal units into segments and dispersing these widely, in **terminology,** in **political treatment,** in **conceptualization** as a whole, European contact was preserving a tribal unity however artificial, even fallacious, it may have come to be.

It was the stated intention of the writer to investigate the history of the Kickapoo with a view to justifying or questioning a treatment of "the tribe" that collected scattered bits of information on culture and assembled these without regard to the time period and place of habitation where such cultural facts were observed. The writer would now be forced to say, unequivocally, that cultural facts from one historical period, or from one local band of Kickapoo, can only be joined to other cultural facts (from a different time and place) if the situational context of the two social groups described is the same. A fact today from the Mexican Kickapoo group has no

greater validity of association, **a priori,** with a fact from the Oklahoma reservation Kickapoo group than does a fact from the Tama Fox, the Menomini, or the Prairie Sioux; it may even have less relevancy. The same consideration probably obtains for attempts to link "Kickapoo" cultural items in the first decade of contact with "Kickapoo" cultural items two or three decades later. Of little use in constructing a tribal ethnography based on the observations and interviews of historical rather than living informants, are composite sources like the **Handbook of American Indians,** which tend to violate the precept that cultural facts be discussed only in relation to their proper time and location. And isn't this, after all, a more proper definition of "cultural relativism" than the possibly well-intentioned, but often misleading, ethic that "Whatever is, is right"?

PART IV

The Cultural Position of the Kickapoo

To attempt defining the cultural position of the Kickapoo, it was necessary to assemble data on the tribe's culture and on the culture of its neighbors. Wisconsin Indian culture has been shown to be markedly affected by the presence of the Europeans, particularly the French. It has been shown to be strikingly affected not alone in the presence of Europeans, however, but, through their reputation and their trade goods, well in advance of their personal appearance. The process of acculturation was lubricated by early European prestige as well as by subsequent European power dominance. It took place by the differential exposure of Indian tribesmen to alternative patterns of behavior, by imitation, by precept and by force, — above all, by the need to react to new situations — and it often followed cleavage lines in aboriginal behavior where alternatives were already present. The acculturative effects of contact with agents of the mercantile-capitalist social system of seventeenth and eighteenth century Europe were seen in the technology, idealogy and social organization of the Indian tribes.

Cultural data, then, varied markedly for the very same tribe

according to the location and the historical period at which that tribe was seen. Since cultural facts are only meaningful relative to the time and place at which a group of people is observed, the mashalling of cultural data has to await an understanding of the tribe's history before recorded cultural facts can be broken down and assembled into groups of facts that belong together historically, behavior patterns belonging to the same historical context.

In the largest section of this paper, the writer presented more or less chronologically the available historical references to the Kickapoo up to 1752 which he then mapped, charted, tabulated, and otherwise analyzed. These were divided into data relating to the different geographical locations at which the Kickapoo tribe or some of its segments were seen, data relating to the associations of the Kickapoo with other tribes — associations of co-settlement, of co-peration and of mutual hostility — and data relating to population trends. These data were also subjected to inductive analysis with regard to the main patterns that seemed to emerge.

The cultural information reviewed by the writer for the time of first contact with the Europeans places the Kickapoo, along with the Mascouten, Fox, Miami, Illinois, and Prairie Siouan groups, in a cultural position somewhat intermediary between that of the pre-horse Plains and that of the Wisconsin Woodland tribes — Menomini, Sauk, Potatwatomi, Chippewa, Ottawa, Huron, Winnebago, and Dakota Siouan groups — mostly found in Kroeber's "Wisconsin or Wild-Rice Area" (1947:88-89). Buffalo hunting, collapsible mat house, the lack of intensive canoe-use, such technological traits, set these Wisconsin-Illinois "Prairie" tribes apart from their northern and eastern neighbors. The distinction seems to have survived in much modified form into the period of cultural levelling induced by the situational context faced by all tribes, at least east of the Mississippi, following the initial European contact.

The contrast that does exist, however, is clearly an ecological one and affords an approach to the cultural positions of the tribes involved. Because all the tribes in the broader region between the western Great Lakes and the Mississippi were at a more or less equivalent level of technology — mixed

hunting, gathering and horticulture — differentiation in habitat affords a convenient guide to differentiation in culture. This is particularly so since the very level of technology involved was such as to respond quite readily to the opportunities and limitations offered by any habitat.

Observations of early writers as well as the works of modern scientists establish the existence of a wedge of prairie and intermittent prairies from across the Mississippi through Illinois and southern Wisconsin, eastward almost to the western end of Lake Erie. Vast herds of buffalo roamed over the major portion of this area. North of it lay, on the west side of Lake Michigan, a mixed forest and marshland area, rich in waterways and wild-rice marshes. This contrast of two areas, two habitats, then, is an approximately constant element in the factors affecting the cultural position of the tribes of the general area.

This primarily ecological contrast between the "Prairie-oriented" tribes and the canoe-using, forest-dwelling, largely wild-rice gathering tribes north or east of them, is certainly not original with this writer. It was noted by Perrot, and after him, by Bacqueville de la Potherie, by the early Jesuits, especially Allouez and Marquette, by the Intendant Antoine Denis Raudot, and by many others up to the present. Kroeber verges on the adoption of just such a viewpoint:

> "The prairie peoples are more difficult to classify than are those of the plains. Just as the prairie shades through river-bottom woodland eastward into parkland and deciduous forest, so with the culture. . . . Roughly, the Prairie tribes correspond to the fourteen agricultural ones listed by Wissler as on the eastern 'border' of the heart of the 'Plains' area. . . .
>
> "To the east of the central and southern Prairie areas lay two others which were in close relation with them: Wisconsin and (Illinois-) Ohio Valley. The former is the wild-rice district west of Lake Michigan. It happens that we possess good studies of three groups in this area, the Menomini, Winnebago, and **Sauk and Fox.** Their culture shows marked resemblances to the Prairie culture. The Ohio Valley area seems less similar. This is surprising, for several reasons. The Wisconsin area was wooded; the Illinois and northeast Indiana parts of the Ohio Valley area were prevailing prai-

rie. Illinois lies between Wisconsin and the Southern Prairie area. . . .

"It is, however, clear that the prairie cultures three hundred years ago were connected more closely with the woodland ones to the east than with those of the plains on the west. . . . Many parts of the prairies contained a fair amount of woodland; some of the tribes reckoned as of the prairie group actually lived rather in the forest; and one of the woodland culture areas was part prairie. . . .

"West of Lake Michigan in Wisconsin, and extending northward to Lake Superior to include adjacent parts of Michigan and Minnesota, there lived at the beginning of the historic period an unusual number of tribes: the Siouan Winnebago and some of the Santee Dakota; and the Algonkin Menomini, Sauk, **Fox, Kickapoo,** Potawatomi and **Mascouten,** and probably some of the Ojibwa. The **Mascouten** lost their identity, the **Kickapoo** and Potawatomi drifted or were driven out, the **Sauk** and **Fox** after a turbulent career moved into the central Siouan prairie. . . . The cause of the population density . . . so far as it was environmental . . . was wild-rice . . .

". . . The area of the drainage of the Ohio, plus Illinois and perhaps most of the southern peninsula of Michigan, in general . . . was as thinly populated at the opening of the historic period as the wild-rice district was densely settled. . . .

"The Illinois would be particularly important to know something about in . . . connection (with the greater cultural resemblance of the Southern Prairie to the Wild Rice than to the nearer Illinois-Ohio Valley area), because their territory, and part of that of the Miami group, lay chiefly in prairie or parkland. . . . There may actually have existed the closer cultural relationship of Illinois with the Prairie areas which the ecological similarity would suggest. **An exact scrutiny,** from the modern comparative angle, **of all available data on the Illinois might conceivably transpose them from the Ohio to the Prairie culture**" (1947:84-91, emphases mine — JS).

The writer has cited this discussion so extensively because whereas Kroeber's pioneering study seemingly approximates the present writer's view that Illinois and southern Wisconsin were inhabited by tribes whose ecology was fundamentally Prairie-oriented, he strangely fails to allocate to such an area the Kickapoo, Mascouten or Fox. Furthermore, he treats

"Sauk and Fox" virtually as a unit. In this regard, it seems rather surprising that a complete bifurcation of Sauk and Fox during the early contact period and perhaps before has not been signalized with much attention by contemporary scholars. It is a division that corresponds exactly to the distinction here made between Prairie and Forest (or "Wild-Rice—it would seem advisable to drop "Wisconsin" as a cultural designation for the wild-rice gathering area of the northern approximately two-thirds of the State). The Sauk lived with and were culturally part of the grouping of the north and the Fox were in the Prairie grouping for almost three-fourths of the period under review (till around 1730).

It may be asked whether the Kickapoo had a typically "Prairie" cultural background in the pre-contact period. By the time they were first observed by the French, the process had already commenced in which they were drawn up into the vortical center of trading activities near Green Bay, disrupted as a "tribe," and dispersed in segmental groups to diverse areas as the influence of the trader and the role of the individual tribal member leading a band of hunters increased. Lacking extensive archeological data that can be clearly ascribed to the Kickapoo, the "Prairie" nature of their pre-contact habitat has had to be inferred from the earliest tribal lists and from historical linguistics.

The general concensus with regard to linguistic affinities appears to be as follows: one group of central Algonkians, composed of Shawnee, Kickapoo, Sauk, Menomini, and Cree, is slightly differentiated from another composed of Chippewa, Ottawa, Potawatomi, Miami, and Peoria (representative of the extant Illinois). Taking Sauk and Fox as very closely related, the Kickapoo are slightly divergent, closer to Fox than to Sauk. The Shawnee to the south of the Kickapoo-Fox-Sauk group are still further removed linguistically, while departing from the Fox and Sauk to the north are the Menomini and, even less closely related, the Cree.

Combining this linguistic information with the approximately constant factor of geographical environment, some picture of tribal migrations and cultural position may be inferred. The grouping of tribes in terms of their cultural similarities and differences may fall out of alignment with the linguistic

groupings of central Algonkian tribes. A notable case is the cultural separation of the Sauk from their close linguistic relatives, here designated as Prairie tribes. The lack of correspondence seems entirely reasonable, however. In defining a culture area or sub-area where the available ethnographic information is so largely limited to technological traits, the influence of the habitat looms large. Furthermore, technological traits, like some other behavior patterns, respond more quickly to the influences of the habitat than do languages. Thus, tribes which are not each other's closest linguistic relatives, may come to share traits which are focal to their common ecological adjustment after a relatively short period of association in the same habitat.

The view of tribal movements to be presented here is at variance with those who have put the Sauk, Fox, Kickapoo, Mascouten, and practically all tribes save the Menomini and Winnebago in the Lower Peninsula of Michigan prior to the Iroquois wars. Kellogg, for example, believed that the Kickapoo, along with other tribes,

> ". . . wandered in the Saginaw and Detroit region (in about 1615, and) . . . the Mascouten and Kickapoo . . . may have lived somewhat to the west of (the Sauk dwelling on Saginaw Bay, and the Foxes along the Detroit River) . . . (in 1634)" (1925:57 and 59-70 respectively).

Keesing (1939) had all of these tribes fleeing to the shelter of Lake Michigan's west side after 1635, when the Iroquois first received guns from the Dutch. Although extensive tribal migrations undoubtedly followed this event and accompanied the appearance of the French at Green Bay shortly after, as has been indicated in this paper, this writer has seen no conclusive proof of an earlier Lower Peninsula Michigan location for **all** these tribes.

The picture that emerges as this writer would synthesize it is that of a wedge composed of Illinois and Miami pushing down through Michigan into the area of prairies and southwestward across the Mississippi, recoiling slightly at the time of contact from an over-extended position in the Arkansas region. The Illinois are to be regarded as the spearhead of this wedge which based itself on the Chippewa-Ottawa-Potawatomi grouping near Sault Ste. Marie. The Potawatomi

themselves were left in the wake of this push, in the northern sections of Lower Peninsula Michigan. The wedge seems to have split apart a northwest-to-southeasterly lying arc of tribes, extending from the Menomini through Sauk, Fox, Kickapoo, and Mascouten to the Shawnee, separating the latter from the remaining related tribes. (The Cree would apparently have been separated from the Menomini-Kickapoo-Fox-Sauk grouping in an earlier westward movement by the Chippewa.) The Fox, the Kickapoo (and Mascouten) were apparently pushed northward out of the open lands immediately west, southwest, and possibly east of Lake Michigan's southern tip. The Sauk may have already been north of the prairie area or else it was at this time that they were forced into the wild-rice area north of their closet relatives, the Fox. Their proximity to the Green Bay center established a different situation and pattern of activities for them than that which characterized the Fox, Kickapoo, and Mascouten, and only after 1732 or so, did they become the practically inseparable associates of the Fox. The Miami and Illinois came to inhabit a territory even more prairie-like in physical character than that into which they had pushed the Kickapoo, Mascouten and Fox.

Despite their different points of origin, the five tribes mentioned — Illinois, Miami, Kickapoo, Mascouten, and Fox — may be grouped in a cultural position here designated "Prairie," a position which excludes the old associates of the Miami-Illinois — the Chippewa, Ottawa, and Potawatomi — as well as the old associates of the Fox-Mascouten-Kickapoo group — the Sauk, Menomoni, and Cree on the north, and the Shawnee on the south. The most strikingly cohesive unit of associated tribes throughout the period under discussion is that of the Kickapoo and Mascouten and the very name "Mascouten" affords some clue to their "Prairie" classification, whether its meaning be interpreted directly as "prairie" or as "fire" (with its relationship to a common phenomenon of the prairies). The two tribes illustrate, in their history, the tendency for tribes of the Wisconsin area to settle together, separate, and re-mingle; this they especially did to a remarkable degree. The Kickapoo-Mascouten, with the extraordinarily frequent addition of the Fox and the occasional addition of

the Miami and Illinois, form the most distinctive associated grouping in the Wisconsin-Illinois border area through the majority of the period detailed in the history given in this paper.

The Kickapoo, then, a tribe or group of Indians with a population presumably somewhat under Mooney's estimate of 2000 in 1650, seem to have been a "Prairie tribe" — intermediary between pre-horse Plains and Wild-Rice area Woodlands in culture — inhabiting the western and southern regions of Wisconsin and the northern regions of Illinois. They and their closest linguistic relatives, the Fox (and Mascouten) had been separated from their other linguistic relatives, the Shawnee, by a wedge of Miami and Illinois, and together with the Mascouten, Fox, Miami, and Illinois formed the Algonkian component of the Wisconsin-Illinois Prairie culture area.

Historically some cultural leveling took place when the Kickapoo were drawn to the Fox River Valley-Green Bay region in the late 1660's and early 1670's. That is, some of the cultural distinctions between wild-rice gathering tribes and prairie-oriented tribes were minimized if not obliterated by the similar situational context faced by all tribes between the western Great Lakes and the Mississippi under the influence of the fur-trade and seventeenth century French, Catholic, mercantile-capitalism generally. Some of this leveling survived as later they dispersed in all directions from that location in divided groups of hunting bands. These worked closely, on a semi-contractual basis, with the individual European traders who poured into the fur-hunting area and drew the Wisconsin tribes no longer solely towards Green Bay, but southwestward and southeastward as well, towards various trading posts, hunting areas and strategic points along the trade routes.

Before long, the Kickapoo-Mascouten-Fox grouping became distinguished in situational context from the grouping of tribes, including the Sauk, clustered around Green Bay. Their situation, which at times precipitated them into very aggressive policy towards some or all Frenchmen and towards various other tribes, was born of a unique geographical and economic position: the all-important factors of almost complete depend-

ency on the hunting and marketing of pelts in exchange for a variety of French manufactures, of competition to become middle-men in the fur trade, of dominating one of the principal trade routes of the continent (the Fox-Wisconsin waterway), and of being subject to rival pulls and attempts at political manipulation by at least two major mercantile power groupings, Canadian and Louisianan, as well as by such dynamic **coureur des bois** as Nicolas Perrot.

The Kickapoo for a long period played a part in the bloc of tribes that clustered around the western side of present-day Wisconsin to associate themselves in the trade of Indian-procured furs for European goods. By 1730, this bloc was broken. The remainder of the time-period considered in this paper — up to 1752 — saw the culmination of the trend which resulted in the tribe's becoming largely dependent upon European-managed trading posts and forts, established throughout the area.

The question may now be raised again which was mentioned previously: why did not the use of the horse come into the area designated here as "Prairie," in the post-contact period, to give rise to behavior patterns similar to those characterizing the Plains Indians of the eighteenth century? In favor of the development of such a culture complex would be the nature of prairie lands, the extent to which aboriginal culture patterns had been disrupted by the contact situation, their raiding activities, the need of these tribes to make increasingly long hunting expeditions, their lack of canoes and their other seemingly pre-horse Plains characteristics including bison hunting, their historical contact with tribes which took up the horse, and the known fact of horse-using west of the Mississippi among the Sauk sometime during the travels of Peter Pond (1740-1775). Kroeber points out some additional factors which should have precipitated a "Plains horse-complex" among the Kickapoo:

> "When bison exploitation through the horse developed a new primary subsistence type on the plains and caused a culture with new emphasis values to evolve there, the prairie tribes were affected because their habitat was sufficiently similar. . . . As soon as the horse made the plains desirable, a drift into them began from all sides. Contributing factors along the eastern front, at least locally, were the

pressure of white encroachment, of tribes equipped with firearms, the westward shrinkage of the bison. . . ." (1947: 85, 87).

Wissler (1914) attempted to answer this question in terms of the combined physical and cultural barrier represented by the Mississippi: that successful raids on horse-using tribes would be prevented by a need to slow down at river-crossings in the midst of pursuit and in terms of the cultural resistance afforded by dependence upon canoe transportation. Against his first argument, somewhat glib and trim, can be leveled the observation that these very Prairie tribes were raiding **on foot** such tribes as the Pawnee who had horses quite early, in order to obtain captives. Certainly, their chances of getaway, river-crossings or no, were slimmer on foot than they would be on horseback. Furthermore, Wissler described elsewhere successful crossings of the lower Mississippi; likewise, his argument here implies that every raid must be so unsuccessful as to elicit a pursuit, with every pursuit close and successful. Against the second argument, it may be shown that some tribes, later to be most intensively horse-using, were in earlier days completely canoe-using; the Dakota are the most noteworthy here. Besides, the "Prairie tribes" of concern here have been described as lacking canoes, or as poor canoers, or even as being afraid of the "canoe-people."

Turning to another anthropologist, Natalie Joffe (1940) gives a very convincing picture of the manner in which acculturation took place unaccompanied by the "horse-complex" among the Tama Fox. She shows strikingly how their later developments in agriculture were predicated upon the adoption of European land-purchase patterns. But she does not explain why the Fox, to begin with, rejected a Plains pattern to accept this European farming one.

The writer is of the opinion that the lateness of the appearance of horses as far north as the upper Mississippi is one factor. This is coupled with a trading-post orientation characteristic of the "Prairie tribes" as a result of the situational context described for the Wisconsin fur-hunting area in the contact period. A third factor is the general depopulation of the area insofar as culturally retentive tribal wholes are concerned — for example, the large Illinois grouping of

tribes had very few remnants by 1750, most of its members had been decimated by war and disease, and a great many had long since passed over into Frontier society through marriage to the settlers of "the American Bottom" area. Thus, the Kickapoo failed to take up the horse in a manner similar to that of the Plains Indians, although situated in an open prairie area, due to their lack of tribal cohesion, their reduced numbers, and their dependence upon the Europeans, as well as the late arrival of the horse-complex on the upper Mississippi.

That the Kickapoo did have some horses by 1788 is apparent in the narrative of William Biggs (1922), but they certainly do not seem to have been preoccupied with obtaining them. The article in the **Handbook** is in error, as far as the writer can learn, in implying that the Kickapoo in the Wisconsin-Illinois area were raiding horses among the Comanche. The only references to relations with the Comanche seen by the writer, concern rather peaceful trading conducted by Kickapoo who had been in the Southwest from the early 1820's. Horses were often included as an exchange item. The only raiding mentioned — the references relied on here being found in the first-hand report of Major Randolph Marcy (1937) in the 1848-1850 period — was on the part of Comanche in the Mexican hacienda lands.

The increase in dependence upon Europeans which marked Kickapoo culture contact during the period focused upon (1640-1752) was not accompanied exclusively by increased European prestige. Hostility and militant resistance to the whites who desired to homestead the area played a mixed role with European prestige in developing attitudes and policies toward the whites. It has been contended in this paper that such militant resistance should not be given the title "conservatism" with the implication of that term that aboriginal culture was being retained.

The fact that population figures long after this period seem to show no striking decrease in the size of the tribe may be due to faulty estimates or to the assimilation of the closely-associated Mascouten into the Kickapoo grouping, as well as the tendency for factors leading to population increase to cancel out factors leading to a decrease in numbers. The retention of the tribal name "Kickapoo" for widely scattered

units (which doubtless would have been ascribed differing names had they been met at first in such a condition by the early Europeans), seems to be in large part a result of the activities of literate, census-taking, European administrators and trade-settlers.

By 1752, the date at which this discussion concludes, most sections of the tribe were in a position to be typical of the Indians regarded as "Border raiders" by the westward advancing white settlers, who were establishing their clearings along the Ohio-Wabash system.

BIBLIOGRAPHY

Adelung, Johann C. and Vater, Johann S.
1812 **Mithridates Oder Allgemeine Sprachenkund mit dem Vater Unser als Sprachprobe in Beinahe Funfhundert Sprachen und Mundarten.** Dritter Theil, Dritte Abteilung. Vossischen Buchandlung, Berlin.

"Additions to the Museum and Library for the Year 1879,"
1880 **Reports,** Vol. II, (1876-71), Peabody Museum of American Archaelogy, Cambridge.

Aiken, R.
1935 "A Packload of Mexican Tales," in **Puro Mexicano.** Ed. by J. Frank Dobie, Texas Folklore Society Publications No. 12, Austin.

Allen, J. A.
1877 "History of the American Bison, Bison Amercanus," in **Ninth Annual Report, United States Geological and Geographical Survey of the Territories, Colorado, etc.,** for 1875. Washington.

Anderson, Melville B. (tr.)
1901 **Relation of the Discoveries and Voyages of Cavelier de La Salle from 1679 to 1681, The Official Narrative.** The Caxton Club, Chicago.

Anderson, Capt. Thomas G.
1882, 1909 "Anderson's Journal at Fort McKay, 1814," in **Wisconsin Historical Collections,** Vol. IX, Madison.
1882, 1909 "The Narratives of Capt. Thomas G. Anderson," in **Wisconsin Historical Collections,** Vol. IX, Madison.

Bacqueville de la Potherie, Claude Charles le Roy
1753 **Histoire de l'Amerique Septentrionale.** (4 Vols.) Paris.
1911, 1912 "History of the Savage Peoples Who Are Allies of New France." From his Historie de l'Amerique Septentrionale (Paris, 1753), Vols. 2 and 4. Trans. and ed. by Emma H. Blair. In **The Indian Tribes of the Upper Mississippi Valley and Region of the Great Lakes.** Arthur H. Clark, Cleveland.

Barcia, Carballido y Zuniga, Andres G.
1723 **Ensayo cronologico para la historia general de la Florida, 1512-1722,** por Gabriel de Cardenas Z. Cano (pseud.) Madrid. (The writer was unable to obtain this work.)

Barton, Benjamin Smith
1798 **New Views of the Origin of the Tribes and Nations of America,** second edition. John Bioren, Philadelphia.

Beckwith, Hiram W.
1880 "Historic Notes of the Northwest," in **History of Iroquois County, Chicago.** (This appears in other Illinois and Indiana county histories also.)
1884 "The Illinois and Indiana Indians," in **Fergus Historical Series No. 27,** Chicago.
1895 "The Land of the 'Illini'," in **The Chicago Tribune,** Feb. 24th.
1903 "French Explorations 1673-1682," in **Illinois Historical Collections,** Vol. I, Springfield.

Biggar, H. P., editor.
1922 **The Works of Samuel de Champlain.** (6 Vols.). The Champlain Society, Toronto.

Biggs, William
1922 **Narrative of the Captivity of William Biggs Among the Kickapoo Indians in Illinois in 1788 Written by Himself.** Heartman's Historical Series No. 37.

Blair, Emma H., editor
1911, 1912. **The Indian Tribes of the Upper Mississippi Valley and Region of the Great Lakes.** (2 Vols.) Arthur H. Clark, Cleveland.

Boas, Franz
1911 **Handbook of American Indian Languages, Part I.** Bulletin No. 40. Bureau of American Ethnology, Washington.
1918 **"Kutenai Tales,"** Bulletin No. 50, Bureau of American Ethnology, Washington.

Briffault, Robert
1927 **The Mothers, a study of the origins of sentiments and institutions.** (3 vols.) The Macmillan Co., New York.

Brower, Jacob V.
1903 **Minnesota, Discovery of its Area, 1540-1665.** Memoirs Exploration in the basin of the Mississippi, Vol. 6, St. Paul.

Brunson, Rev. Alfred
1859, 1906 "Early History of Wisconsin," in **Wisconsin Historical Collections,** Vol. IV, Madison.

Byrmner, Douglas
1888 "Capture of Fort McKay, Prairie du Chien, in 1814," in **Wisconsin Historical Collections,** Vol. XI, Madison.

Bushnell, David I., Jr.
1919 **Native Villages and Village Sites East of the Mississippi.** Bulletin No. 69, Bureau of American Ethnology, Washington.
1920 **"Native Cemeteries and Forms of Burial East of the Mississippi."** Bulletin No. 71, Bureau of American Ethnology, Washington.
1922 **Villages of the Algonquian, Siouan, and Caddoan Tribes West of the Mississippi.** Bulletin No. 77, Bureau of American Ethnology, Washington.

Butterfield, Consul Willshire
1881 **History of the Discovery of the Northwest by John Nicollet in 1634 with a Sketch of His Life.** Robert Clarke, Cincinnati.
1898 **History of Brule's Discoveries and Explorations 1610-1626.** Helman-Taylor, Cleveland.

Byers, Douglas S.
1946 "The Environment of the Northeast," in **Man in Northeast North America.** Ed. by Frederick Johnson. Papers of the Robert S. Peabody Foundation for Archeology, Vol. III. Phillips Academy, Andover.

Cain, Frances Smith
1940 **The Kickapoo Indians, 1832-1895.** (M. A., History), University of Oklahoma. This work came to the writer's attention too late for consultation; the gist presented in the University of Oklahoma Bulletin of Publications for Degrees was inadequate for analytical purposes.

Carr, Lucien
1882 **The Mounds of the Mississippi Valley Historically Considered.** Kentucky Geological Survey Memoirs, Vol. II, Yeoman Press, Frankfort.

Champlain, Samuel de (See Biggar, H. P.)

Charlevoix, Pierre Francois Xavier de
1763 **Letters to the Dutchess of Lesdiguieres; giving an Account of a Voyage to Canada, and Travels Through the Vast Country and Louisiana, to the Gulf of Mexico.** R. Goodby and R. Baldwin, Lonon.
1922 **Journal of a Voyage to North America.** (2 Vols.). Ed. by Louise P. Kellogg. Caxton Club, Chicago.

Chasnel, Paul
1932 **History of Cavelier de la Salle.** G. P. Putnam's Sons, New York.

Colden, Cadwallader
1866 **The History of the Five Indian Nations Depending on the Province of New York.** Ed. by John Cilmary Shea (from Bradford's New York edition, 1727.) T. H. Howell, New York.

Cooper, John M.
1939 "Is the Algonquian Family Hunting Ground System Pre-Columbian?" **American Anthropologist,** n. s. 41, Menasha.

Coxe, Daniel
1741 **Description of the English Province of Carolina by the Spaniards call'd Florida and by the French, La Louisianne.** Olive Payne, London.

Croghan, Col George
1831 "Journal of Col. George Croghan," in **Featherstonhaugh American Monthly Journal of Geology,** Dec. New Jersey Enterprise Books and Job Printing Establishment, Burlington, N. J.
1871 "Letter to Major Horatio Gates in the Aspinwall Papers," in **Collections of the Massachusetts Historical Society,** 4th Series, Vol. IX, John Wilson and Son, Boston.

Cruckshank, Ernest A.
1892 "Robert Dickson, the Indian Trader," in **Wisconsin Historical Collections,** Vol. XII, Madison.

Culin, Stewart
1907 **Games of the North American Indians.** Twenty-Fourth Annual Report, Bureau of American Ethnology, Washington.

Custes, Milo
1906-07 "Kickapoo Vocabulary." U. S. MMS. 5F, **Wisconsin Historical Society,** Madison.

Cyclopedia of Michigan: Historical and Biographical.
1900 Western Publishing and Engraving Co., New York and Detroit.

Dalton, Capt.
1809 "An Estimate of the Indian Nations Employed by the British in the Revolutionary War, with the Number of Warriors Annexed to Each Nation," in **Collections of the**

Massachusetts Historical Society, 1st Series, Vol. X, Monroe, Francis and Parker, Boston.

Dixon, Roland B.
1909 "The Mythology of the Central and Eastern Algonkins," in **Journal of American Folk Lore,** Vol. XXII, pp. 1-9, Houghton Mifflin, Boston.

Densmore, Frances
1932 **Menomini Music.** Bulletin No. 102, Bureau of American Ethnology, Washington.

Drake, Samuel G., editor
1859 **Indian Captivities or Life in the Wigwam.** C. M. Saxton, New York.

Draper, Lyman C., editor
1833-35, 1888 "Early French Forts in Western Wisconsin," in **Wisconsin Historical Collections,** Vol. X, Madison.
1857, 1904 "The Cass Manuscripts." Trans. by Col. Charles Whittlesey, in **Wisconsin Historical Collections,** Vol. III, Madison.
1868, 1907 "Historical Notices," in **Wisconsin Historical Collections,** Vol. V, Madison.
1888, 1909 "Lawe and Grignon Papers, 1794-1821," in **Wisconsin Historical Collections,** Vol. X, Madison.

Dunn, J. P. Jr.,
1904 **Indiana, A Redemption from Slavery.** Houghton Mifflin, The Riverside Press, Cambridge.

Eiseley, Loren C. and Speck, Frank G.
1939 "Significance of Hunting Terrtory Systems of the Algonkian in Social Theory," **American Anthropologist,** n. s. 41, Menasha.

Felch, Alpheus
1896 "The Indians of Michigan and the Cession of their Lands to the United States by Treaties," in **Michigan Pioneer and Historical Society,** Vol. XXVI, (Annual meeting, 1894). Robert Smith and Co., Lansing.

Fisher, Margaret Welpley
1946 "The Mythology of the Northern and Northeastern Algonkians in Reference to Algonkian Mythology as a Whole," in **Man in Northeast North America.** Ed. by Frederick Johnson. Papers of the Robert S. Peabody Foundation for Archaeology, Vol. III. Phillips Academy, Andover.

Fletcher, Alice and LaFlesche, Francis
1911 **The Omaha Tribe.** Twenty-seventh Annual Report, Bureau of American Ethnology, Washington.

Foreman, Grant (See Marcy, Capt. Randolph B.)

Foryth, Thomas
1911, 1912 "An Account of the Manners and Customs of the Sauk and Fox Nations of Indians Traditions," (sic). A report sent to Gen. William Clark, Superintendent of Indian Affairs, (St. Louis, Jan. 15, 1927), In Blair, Emma H. **Indian Tribes of the Upper Mississippi and Great Lakes.** Arthur H. Clark, Cleveland.
1911, 1912 "The Kickapoo Prophet," (Memo at end of Vol. IX, the Forsyth Papers), in Blair, Emma H. **Indian Tribes of the Upper Mississippi and Great Lakes Region,** Arthur H. Clark, Cleveland.

Fox, George R.
1923 "The Archaeology of Michigan," in **Michigan History Magazine,** Vol. VII, Michigan Historical Commission, Lansing.

Gale, George
1867 **Upper Mississippi: or Historical Sketches of the Mound-builders, the Indian Tribes, and the Progress of Civilization in the Northwest.** Clarks, Chicago.

Grant, W. L., editor
1907 **The Voyages of Samuel de Champlain,** 1604-1618. Original Narratives of Early American History Series, Charles Scribner, New York.

Gregory, John Goodgy
1896 **Jonathan Carver, His Travels in the Northwest in 1766-68.** Parkman Club Publications No. 5, Milwaukee, April 14).

Haines, Francis
1938 "The Northward Spread of Horses Among the Plains Indians," **American Anthropologist,** n. s. 40, Menasha.

Hall, James. (See McKenney, Thomas.)

Hatt, Goodmond
1916 "Moccasins and Their Relation to Arctic Footwear," in **Memoirs of the American Anthropological Association,** Vol. III, Lancaster.

Hebberd, Stephen S.
1890 **History of Wisconsin under the Dominion of the French.** Midland Publishing Co., Madison.

Hennepin, Louis
1698 **A New Discovery of a Vast Country in America.** London.

Hewitt, J. N. B., editor
1937 **Journal of Rudolph Friedrich Kurz.** Trans. by Jarell. Bulletin No. 115, Bureau of American Ethnology, Washington.

Hinsdale, Wilbert B.
1925 **Primitive Man in Michigan.** University Museum of the University of Michigan, Handbook Series No. 1, Ann Arbor.
1931 **Archaeological Atlas of Michigan.** University of Michigan Press, Ann Arbor.
1932 **The Distribution of the Aboriginal Population of Michigan.** Occasional Contributions from the Museum of Anthropology of the University of Michigan No. 2, University of Michigan Press, Ann Arbor.

"Historical News, Notes and Comment"
1919 In **Michigan History Magazine,** Vol. III, No. 2, Lansing.

Hockett, Charles F.
1949 "Implications of Bloomfield's Algonquian Studies," in **Language,** Vol. XXIV, No. 1. Linguistic Society of America, Waverly Press, Baltimore.

Hodge, F. W., Editor
1907, 1910 **Handbook of the American Indians North of Mexico.** (2 parts.) Bulletin No. 30, Bureau of American Ethnology, Washington.
1922 "Administrative Report," **Thirty-fourth Annual Report,** Bureau of American Ethnology, Washington.

Hoffman, W. J.
1896 **The Menomini Indians.** Fourteenth Annual Report, Part I), Bureau of American Ethnology, Washington.

Holmes, William H.
1907 "Administrative Report," **Twenty-fourth Annual Report,** Bureau of American Ethnology, Washington.
1915 "Administrative Report," **Thirtieth Annual Report,** Bureau of American Ethnology, Washington.

Hrdlicka, Ales
1909 **"Tuberculosis Among Certain Indian Tribes of the United States."** Bulletin No. 42, Bureau of American Ethnology, Washington.

Hull, Warren C.
1933 "A Minor Mystery of Early Michigan," in **Michigan History Magazine,** Vol. XVII, Michigan Historical Commission, Lansing.

Hunt, George T.
1940 **The Wars of the Iroquois, A Study of Intertribal Trade Relations.** University of Wisconsin Press, Madison.

Hunter, John D.
1823 **Manners and Customs of Several Indian Tribes Located West of the Mississippi.** J. Maxwell, Philadelphia.

Jenks, Albert E.
1900 **The Wild Rice Gatherers of the Upper Lakes.** Nineteenth Annual Report, (Part II), Bureau of American Ethnology, Washington.

Jesuit Relations and Allied Documents
(See Thwates, Reuben Gold.)

Joffe, Natalie F.
1940 "The Fox of Iowa," in Linton, Ralph, **Acculturation in Seven American Indian Tribes,** D. Appleton-Century, New York and London.

Jones, William
1905 "The Algonkian Manitou," in **Journal of American Folklore,** Vol. XVIII, No. 70, (pp. 183-190), Houghton-Mifflin, Boston & New York.
1906 "An Algonquian Syllabary," in **Anthropological Papers Written in Honor of Franz Boas (25th PhD Anniversary).** G. E. Stechert, New York.
1907 **Fox Texts.** Papers of the American Ethnological Society, Vol. I. E. J. Brill, Leyden.
1913 "Kickapoo Ethnological Notes," **American Anthropologist,** n. s. 15, Lancaster.
1915 **Kickapoo Tales.** Publications of the American Ethnological Society, No. IX. E. J. Brill, Leyden.
1939 **Ethnography of the Fox Indians.** Ed. by Margaret Welpley Fisher. Bulletin No. 125, Bureau of American Ethnology, Washington.

Jouan, Henry and Clark, Grace
1888 "Jean Nicolet Interpreter and Voyageur in Canada, 1618-1642," in **Wisconsin Historical Collections,** Vol. XI, Madison.

Keesing, Felix M.
1939 **The Menomini Indians of Wisconsin, A Study of Three Centuries of Cultural Contact and Change.** (Memoirs, Vol. X.) American Philosophical Society, Philadelphia.

Kellogg, Louise Phelps
1912 "Migrations of the Wisconsin Indians," in **Baraboo (Wis.) News,** April 20, 1912.
1912 (editor). **Frontier Advance on the Upper Ohio, 1778-79.** Wisconsin Historical Collections, Vol. XXIII, Draper Series, Vol. IV, Madison.
1917 (editor). **Early Narratives of the Northwest, 1654-1699).** Original Narratives of Early American History Series, Charles Scribner, New York.
1919-1920 **The Story of Wisconsin, 1634-1648.** From **Wisconsin Magazine of History,** Vols. II and III. Madison, March 1919-June 1920.

1921 "The First Missionary in Wisconsin," in **Wisconsin Magazine of History**, Vol. IV, Madison, (June).
1922 "The First Traders in Wisconsin," in **Wisconsin Magazine of History**, Vol. V, Madison, (June).
1925 **The French Regime in Wisconsin and the Northwest.** State Historical Society of Wisconsin, Madison.
1934 **The Tercentennial of the Discovery of Wisconsin.** State Historical Society of Wisconsin.
1936 **French Discovery of Wisconsin.** 3F Laundry Publication, Madison.
? **Indian Tribes in Wisconsin**, (typewritten), n. p., n. d.

Kellogg, Louise Phelps and Thwaites, Reuben Gold, editors.
1912 **Frontier Defense on the Upper Ohio, 1777-78.** Wisconsin Historical Socety, Draper Series III, Madison.

Kellogg, Louise Phelps (See Thwaites, Reuben Gold and Kellogg, Louise Phelps)

Kingston, John T.
1908 "Early Western Days (Recollections)," in **Wisconsin Historical Collections**, Vol. VII, Madison, 1876.

Kinietz, W. Vernon, editor
1938 **Trowbridge, C. C.: Meearmeear Traditions.** Occasional Contributions From the Museum of Anthropology of the University of Michigan, No. 7, University of Michigan Press, Ann Arbor.
1940 **Indians of the Western Great Lakes.** Occasional Contributions From the Museum of Antropology of the University of Michigan, No. 10, University of Michigan Press, Ann Arbor.

Kinietz, W. Vernon and Voegelin, Erminie.
1939 **Shawnee Traditions—C. C. Trowbridge's Account.** Occasional Contributions From the Museum of Anthropology of the University of Michigan, No. 9, University of Michigan Press, Ann Arbor.

Kroeber, Alfred L.
1947 **Cultural and Natural Areas of Native North America,** Second printing, University of California Publications in American Archaeology and Ethnology, University of California Press, Berkeley and Los Angeles.

Krzywicki, Ludwik
1934 **Primitive Society and Its Vital Statistics.** Macmillan & Co., London.

Lafitau, P.
1724 **Moeurs des Sauvages Ameriquains, comparees aux Moeurs des premiers temps.** Paris.

LaFlesche, Francis (See Fletcher, Alice).

Lahontan, Baron de
1905 **New Voyages to North America (1703).** Ed. by Reuben Gold Thwaites (2 Vols.). A. C. McClurg, Chicago.

Law, John
1857, 1904 "Jesuit Missionaries in the Northwest," in **Wisconsin Historical Collections**, Vol. III, Madison.

Lesser, Alexander
1929 "Kinship Origins in the Light of Some Distributions," **American Anthropologist**, n. s. 31, Menasha.

Life and Scene Among the Kickapoo Indians, their manners, habits and customs. Messrs. Healy and Bigelow, Hqrs., Kickapoo Indian Remedies, New Haven (no date). This publication appears in the Ayer Collection, Newberry Library, University of Chicago.

Linton, Ralph
1917 "The Indian History of Illinois," in Publication No. 22 of the Illinois Historical Library, entitled **Transactions of the Illinois State Historical Society for the Year 1916,** Springfield.
1937 **The Study of Man, An Introduction.** D. Appleton-Century, New York & London.
1940 (editor) **Acculturation in Seven American Indian Tribes.** D. Appleton-Century, New York and London.

Lockwood, James H.
1856, 1903 "Early Times and Events in Wisconsin," in **Wisconsin Historical Collections,** Vol. II, Madison.

Loskiel, George Henry
1794 **History of the Mission of the United Brethren Among the Indians in North America.** John Stockdale, London.

Lowie, Robert Harry
1910 "Notes Concerning New Collections," in **Anthropological Papers of the American Museum of Natural History,** Vol. IV, Part II, New York.
1918 "Myths and Traditions of the Crow Indians," in **Anthropological Papers of the American Museum of Natural History,** Vol. XXV, Part I, New York.

Mallery, Garrick
1881 "Sign Language Among North American Indians Compared with That Among Other Peoples and Deaf-Mutes." **First Annual Report,** Bureau of American Ethnology, Washington.
1893 "Picture-writing of the American Indians." **Tenth Annual Report,** Bureau of American Ethnology, Washington.

Marcy, Capt. Randolph B. and McClellan, Capt. G. B.
1937 **Adventure on Red River, Report on the Exploration of Headwaters of the Red River.** Ed. by Grant Foreman. University of Oklahoma Press, Norman.

Margry, Pierre
1876-86 **Decouvertes et Etablissements des Francais dans L'-ouest et dans le sud de l'Amerique Septentrionale (1614-1754) Memoires et Documents Originaux.** (6 Vols.) D. Jouaust, Paris.

Marsh, Rev. Cutting
1900 "Expedition to the Sacs and Foxes," in **Wisconsin Historical Collections,** Vol. XV, Madison.

Marshall, Humphrey (See Rafinesque, C. S.)

Martin, Lawrence
1916 **The Physical Geography of Wisconsin.** Wisconsin Geological and Natural History Survey, Bulletin No. XXXVI, Educational Series No. 4, Madison.

McClellan, Capt. G. B. (See Marcy, Capt. Randolph B.)

McKenney, Thomas and Hall, James
1934 **The Indian Tribes of North America.** (3 Vols.) John Grant, Edinburgh.

Michelson, Truman
1912 **Preliminary Report on the Linguistic Classification of an Algonquian Tribe.** Twenty-eighth Annual Report, Bureau of American Ethnology, (1906-07), Washington.
1913 "Notes on the Folklore and Mythology of the Fox Indians." (Extract) in Proceedings, American Anthropological Association, **American Anthropologist,** n. s. 15, Lancaster.
1914 "Notes on the Fox Indians of Iowa." (Extract) Address, Jan. 6, 1914 meeting, Anthropological Society of Wash-

American Anthropologist, n. s. 16, Lancaster.
1916 "Terms of Relationship and Social Organization." **Proceedings, National Acadamy of Sciences,** Vol. II. Williams and Wilkins, Baltimore.
1917 "Notes on Peoria Folk-Lore and Mythology," in **Journal of American Folk Lore,** Vol. XXX. G. E. Stechert, Lancaster.
1917 "Notes on the Peoria Indians." (Extract) Address, Dec. 19, 1916 meeting, Anthropological Society of Washington, **American Anthropologist,** n. s. 19, Lancaster.
1921 "The Classification of American Languages," **American Anthropologist,** n. s. 23, Lancaster.
1923 "On the Origin of the So-Called Dream Dance of the Central Algonkians," **American Anthropologist,** n. s. 25, Menasha.
1923 "The Punishment of Impudent Children Among the Kickapoo," **American Anthropolgist,** n. s. 25, Menasha.
1925 Notes on the Fox Mortuary Customs and Beliefs," **Fortieth Annual Report,** Bureau of American Ethnology, Washington.
1925 "Notes on the Fox Society known as Those Who Worship the Little Spotted Buffalo," **Fortieth Annual Report,** Bureau of American Ethnology, Washington,
1927 **"Contributions to Fox Ethnology,"** Bulletin No. 85, Bureau of American Ethnology, Washington.
1929 **"Observations on the Thunder Dance of the Bear Gens of the Fox Indians,"** Bulletin No. 89, Bureau of American Ethnology, Washington.
1929 "Algonkian Indian Tribes of Oklahoma and Iowa." **Explorations and Fieldwork of the Smithsonian Institution in 1923,** Publication 3011, Smithsonian Institute, Washington.
1930 "Contributions to Fox Ethnology," **Bulletin No. 95,** Bureau of American Ethnology, Washington.
1930 "Studies of the Algonquian Tribes of Iowa and Oklahoma," in **Explorations and Fieldwork of the Smithsonian Institution in 1929,** Publication 3060, Smithsonian Institute, Washington.
1932 **"Notes on the Fox Wapanowiweni,"** Bulletin No. 105, Bureau of American Ethnology, Washinton.
1933 "Kickapoo," **American Anthropologist,** n. s. 35, Menasha.
1934 "The Identification of the Mascoutens," **American Anthropologist,** n. s. 36, Menasha.
1934 "Notes on Kickapoo Ethnology," **American Anthropologst,** n. s. 36, Menasha.
1935 "Once More Mascoutens," **American Anthropologist,** n. s. 37, Menasha.
1936 "Miss Owen's 'Folklore of the Moscuakie Indians'," **American Anthropolist,** n. s. 38, Menasha.
1937 **"Fox Miscellany," Bulletin** No. 114, Bureau of American Ethnology, Washington.
1937 "Fox Miscellany," **Bulletin No. 114,** Bureau of American
1938 **What Happened to a Green Bear Who Was Blessed with a Sacred Pack.** Bulletin No. 119, Anthropological Papers No. 4, Bureau of American Ethnology, Washington.
1938 "Sol Tax on the Social Organization of the Fox Indians," **American Anthropologist,** n. s. 40, Menasha.

Michigan Bibliography
1921 Ed. by F. B. Streeter, (2 Vols.) Michigan Historical Commission, Lansing.

Mills, James Cooke
1918 **History of Saginaw County, Michigan,** Vol. I. Seeman & Peters, Saginaw.

Mishkin, Bernard
1940 **Rank and Warfare Among the Plains Indians.** Monographs, No. 3, J. J. Augustin, New York.

Mooney, James
1896 **The Ghost Dance Religion and the Sioux Outbreak of 1890.** Fourteenth Annual Report, (Part II), Bureau of American Ethnology, Washington.
1900 **Myths of the Cherokee. Nineteenth Annual Report,** (Part I), Bureau of American Ethnology, Washington.

Morgan, Lewis Henry
1871 **Systems of Consanguinity and Affinity of the Human Family.** Smithsonian Contributions to Knowledge, Vol. XVII. Smithsonian Institution, Washington.
1881 **Houses and House-Life of the American Aborigines.** Contributions to American Ethnology, Vol. IV, U. S. Geographical Survey, Department of Interior, Washington.

More, Rev. Jedidiah
1797 **The American Gazeteer.** S. Hall & Thomas & Andrews, Boston.
1822 **A Report to the Secretary of War of the United States on Indian Affairs, comprising a Narrative of a Tour Performed in the Summer of 1820 . . . ,** New Haven.

Mott, Mildred
1938 "The Relation of Historic Indian Tribes to Archeological Manifestations in Iowa," in **The Iowa Journal of History and Politics,** Vol. XXXVI, No. 3. State Historical Society of Iowa, Iowa City.

Neill, Edward D.
1882 **History of the Minnesota Valley.** North Star Publishing Co., Minneapolis.
1889 "A Critical Period for the French Traders of Lake Mich-Michigan and Superior, A. D. 1684, with some Letters, now First Printed," **Macalaster College Contributions,** 2d Series, No. 7. St. Paul.

O'Callaghan, Edward B.
1854-58 **Documents Relative to the Colonial History of New York, Procured in Holland, England and France, by John R. Brodhead;** Weed, Parsons, & Co., Albany.

Owen, Mary Alicia
1908 "Algonquins, (Prairie Tribes . . .)," in **Encyclopedia of Religion and Ethics,** Vol. I. Ed. by Rev. James Hastings. Charles Scribner, New York.

Perrot, Nicolas
1911-12 "Memoir on the Manners, Customs, and Religion of the Savages of North America." In Blair, Emma H., **The Indian Tribes of the Upper Mississippi Valley and Region of the Great Lakes.** Arthur H. Clark, Cleveland. (See also Tailhan, Jules.)

Powell, J. W.
1891 **Indian Linguistic Families of America North of Mexico.** Seventh Annual Report, Bureau of American Ethnology, Washington.

Radin, Paul
1923 **The Winnebago Tribe.** Thirty-Seventh Annual Report, Bureau of American Ethnology, Washington.

Radisson, Pierre Esprit (See Scull, Gideon D.)

Rafinesque, C. S.

1824 "Ancient Annals of Kentucky." Introduction of Marshall, Humphrey, **The History of Kentucky**, George S. Robinson, Frankfort (Ky.).

Raudot, Antoine Dennis
1940 "Memoir Concerning the Different Indian Nations of North America." Ed. by Kinietz, W. Vernon in **Indians of the Western Great Lakes.** Occasional Contributions From the Museum of Anthropology of the University of Michigan, No. 10, University of Michigan Press, Ann Arbor.

Redfield, Robert
1941 **The Folk Culture of Yucatan.** University of Chicago.

Relations of the Discoveries and Voyages of Cavelier de LaSalle from 1679 to 1681. The Official Narrative. See Anderson, Melville B.)

Royce, Charles. (See Thomas, Cyrus, third entry)

Runals, Judge E. D.
"Story of the Mascouten Nation and Their Massacre," in (Files of) **Ripon Commonwealth,** 1888-89. U. S. Mss. 7E, Wisconsin Historical Society.

Sagard, Gabriel (See Wrong, George M.)

Schermerhorn, John F.
1846 "Report Respecting the Indians Inhabiting the Western Parts of the United States," in **Collections of the Massachusetts Historical Society,** 2nd Series, Vol. II, (1814) Reprinted: Charles C. Little & James Brown, Boston.

Schoolcraft, Henry Rowe
1848 **The Indian in His Wigwam or Characteristics of the Red Race of America.** W. H. Graham, New York.
1851 **The American Indians, Their History, Condition, and Prospects.** Wanzer, Foot & Co., Rochester.
1851 **Personal Memories of a Residence of Thirty Years With the Indian Tribes on the American Fontiers, 1812-1842** Lippincott, Grambo & Co., Philadelphia.
1853 **Western Scenes and Reminiscenses Together With Thrilling Legends and Traditions of the Red Men of the Forest.** Denby, Orton & Mullgan, Buffalo.
1853-57 **Historical and Statistical Information Respecting the History, Condition, and Prospects of the Indian Tribes of the United States.** (6 vols.) J. B. Lippincott, Philadelphia.

Schultes, Richard Evans
1938 "The Appeal of Peyote (Lephophora Williamsii) as a Medicine," **American Anthropologist,** n. s. 40, Menasha.

Scull, Gideon D., editor
1885 **The Voyages of Peter Esprit Radisson.** The Prince Society, Boston.

Shea, John Gilmary, editor.
1853 **Discovery and Exploration of the Mississippi Valley.** Redfield, New York.
1861 **Early Voyages Up and Down the Mississippi by Cavelier, St. Cosme, Le Sueur, Gravier, and Guignas.** Joel Munsell, Albany.
1904 "Indian Tribes of Wisconsin," in **Wisconsin Historical Collections,** Vol. III, Madison, 1857.

Skinner, Alanson, B.
1915 "Societies of the Iowa, Kansas, and Ponca Indians," in **Anthropological Papers of the American Museum of Natural History,** Vol. XI, Part IX, New York.

1921 **Material Culture of the Menomini.** Indian Notes and Monograph Series, No. 20. Museum of the American Indian, Heye Foundation, New York.

1923 "A Further Note on the Origin of the Dream Dance of the Central Algonkian and Southern Siouan Indians," **American Anthropologist,** n. s. 25, Menasha.

1923-26 **Ethnology of the Ioway Indians.** Bulletins of the Public Museum of the City of Milwaukee, Vol. V, No. 4. Aetna Press, Milwaukee.

1923-26 **Observations on the Ethnology of the Sauk Indians.** Bulletins of the Public Museum of the City of Milwaukee, Vol. V, No. 1-3. Advocate Publishing Co., Milwaukee.

1924-27 **The Mascoutens or Prairie Potawatomi Indians.** Bulletins of the Public Museum of the City of Milwaukee, Vol. VI, No. 1-3. Aetna Press, Milwaukee.

1925 "Final Observations on the Central Algonkian Dream Dance," **American Anthropologist,** n. s. 27, Menasha.

Smith, Capt. Henry

1888, 1909 "Indian Campaign of 1832 (Blackhawk War), in **Wisconsin Historical Collections,** Vol. X, Madison.

"Social Organization of the Fox Indians: A Correction,"

1938 (Typographical Error Corrected), **American Anthropologist,** n. s. 40, No. 3, Menasha.

Speck, Frank G. (See Eiseley, Loren C.)

Spier, Leslie

1925 "The Distribution of Kinship Systems in North Amerisa," in **University of Washington Publications in Anthropology,** Vol. 1, No. 2, University of Washington Press, Seattle.

Spier, Leslie (Editor)

1941 Language, Culture and Personality, Menasha, Wis.

Stirling, M. W.

1932 "Administrative Report," **Forty-seventh Annual Report,** Bureau of American Ethnology, Washington.

1933 "Administrative Report," **Forty-eighth Annual Report,** Bureau of American Ethnology, Washington.

1940 "Administrative Report," **Fifty-sixth Annual Report,** Bureau of American Ethnology, Washington.

Streeter, F. B. **(See Michigan Bibliography).**

Stroebel, Charles F.

1931 **Cultural Contacts of the Ojibway Indians.** (B. A. Anthropology), University of Wisconsin.

Strong, William Duncan.

1929 "Cross Cousin Marriage and the Culture of the Northeastern Algonkian," **American Anthropologist,** n. s. 31, Menasha.

Swanton, John R.

1905 "The Social Organization of American Tribes." **American Anthropologist,** n. s. 7, Lancaster.

1929 **Myths and Tales of the Southeastern Indians.** Bulletin No. 88, Bureau of American Ethnology, Washington.

1942 **Source Material on the History and Ethnology of the Caddo Indians,"** Bulletin No. 132, Bureau of American Ethnology, Washington.

1946 **The Indians of the Southeastern United States.** Bulletin No. 137, Bureau of American Ethnology, Washington.

Tailhan, Jules (translator and editor).

1864 **Nicolas Perrot: Memoir on the Manners, Customs and Religion of the Savages of North America.** Librairie A. Franck, Leipzig & Paris.

Tanner, John
1830 **A Narrative of the Captivity and Adventures of John Tanner.** Prepared for press by Edwin James, M. D. G. & C. & H. Carvill, New York.

Ten, Kate, H F. C.
1884 **Sur la synonymie ethique et la toponymie chez les Indiens des l'Amerique du Nord.** Amsterdam.

Thomas, Cyrus.
1887 "Burial Mounds of the Northern Sections of the United States." **Fifth Annual Report,** Bureau of American Ethnology, Washington.
1889 **The Problem of the Ohio Mounds.** Bulletin No. 8, Bureau of American Ethnology, Washington.
1899 "Introduction" to Royce, Charles, **Indian Land Cessions in the United States.** Eighteenth Annual Report, (Part II), Bureau of American Ethnology, Washington.

Tooker, William Wallace
1894 "The Algonquian Terms Patawomeke and Massawomeke," **American Anthropologist,** Vol. III (Old series), Washington.

Thwaites, Reuben Gold, editor.
1888 "Letter-book of Thomas Forsyth, 1814-1818," in **Wisconsin Historial Collections,** Vol. XI, Madison
1888 "Papers From the Canadian Archives (1778-1783)," in **Wisconsin Historical Collections,** Vol. XI, Madison.
1888 "Dickson and Grignon Papers, 1812-15," in **Wisconsin Historical Collections,** Vol. XI, Madison.
1895 "The Bulger Papers," in **Wisconsin Historical Collections,** Vol. XIII, Madison.
1895 "The Story of Chequamegon Bay," in **Wisconsin Historical Collections,** Vol. XIII, Madison.
1896-1901 **Jesuit Relations and Allied Documents. The Travels and Explorations of the Jesuit Missionaries in New France,, 1610-1791.** (73 Vols.) Burrows Brothers, Cleveland.
1902, 1906, 1908. "The French Regime in Wisconsin," (2½ Vols.), in **Wisconsin Historical Collections,** Vols. XVI-XVIII, Madison.
1908 "The British Regime in Wisconsin," in **Wisconsin Historical Collections,** Vol. XVIII, Madison.
1911 "The Fur Trade in Wisconsin," in **Wisconsin Historical Collections,** Vol. XX, Madison.

Thwaites, Reuben Gold
(See Kellogg, Louise Phelps, **Frontier Defense . . .**)

Thwaites, Reuben Gold and Kellogg, Louise Phelps, editors.
1908 **Revolution on the Upper Ohio, 1775-77,** in Wisconsin Historical Society, Draper Series II, Madison.

Travels in New France by J. C. B.
1941 Pennsylvania Historical Society, Works Progress Administration, Harrisburg.

Trowbridge, C. C. (See Kineitz, W. Vernon, first entry.)

Vestal, Stanley.
1940 **King of the Fur Traders, the Deeds and Deviltry of Pierre Esprit Radisson.** Houghton Mifflin, The Riverside Press, Cambridge.

Voegelin, Carl F. and Voegelin E. W.
1946 "Linguistic Considerations of Northeastern North America," in **Man in Northeastern North America.** Ed. by Frederick Johnson, Papers of the Robert S. Peabody

Foundation for Archaeology, Vol. III. Phillips Academy, Andover.

Voegelin, Erminie
(See Kineitz, W. Vernon and Voegelin, Erminie.)

Waterman, T. T.
1914 "The Explanatory Element in the Folk-Tales of the North American Indian," in **Journal of American Folk Lore,** Vol. XXVII. G. E. Stechert, New York.

Weltfish, Gene
1930 "Prehistoric North American Basketry Techniques and Modern Contributions," **American Anthropologist,** n. s. 32, Menasha.

Wissler, Clark.
1914 "The Influence of the Horse in the Development of Plains Culture," **American Anthropolist,** n. s. 16, No. 1, Lancaster.
1916 "Structural Basis to the Decorations of Costumes Among the Plains Indians," in **Anthropological Papers of the American Museum of Natural History,** Vol. XVII, Part III, New York.
1922 **The American Indian, An Introduction to the Anthropology of the New World,** second edition. Oxford University Press, New York.

Wolfe, Ed.
1926 "Kickapoo Archery," in Out-of-Doors Section, **Saturday Evening Post,** (August 14, 1926), Vol. 199, New York.

Wood, John J. Jr.
1907 "The Mascouten Village," Paper read before X-Ray Club, Berlin, Wis. (Saturday, Feb. 9, 1907), **Wisconsin Historical Society,** (File).

Woods, Carter A.
1934 "A Criticism of Wissler's North American Culture Areas," **American Anthropologist,** n. s. 36, Menasha.

Wrong, George M., editor.
1939 **Father Gabriel Sagard: The Long Journey to the Country of the Hurons.** The Champlain Society, Toronto.

The above works form the basis for quotations and analysis in the paper presented. The following are additional works about which the writer became aware, but which he was unable to consult. They are presented in the interest of more thoroughly completing this bibliograph which may be the basis for further resarch on the Kickapoo.

Buntin, Martha
1933 "The Mexican Kickapoos." **Chronicles of Oklahoma,** Vol. XI. The Oklahoma Historical Society, Oklahoma City.

Cain, Frances Smith
1940 **The Kickapoo Indians, 1832-1895.** MA Thesis, University of Oklahoma, Norman.

Dorsey, J. Owen.
The following Mss. are available at the Bureau of American Ethnology, with their publication dates: Cegiha (1878), Tciware (1879), Osage (1883), and Kansa (1882). They are listed at the end of the Section on "Kickapoo" in the **Handbook of American Indians, North of Mexico.**

Gatschet, Albert S.
The following Mss. are available at the Bureau of American Ethnology, with their publication dates: Wyandotte (1881), Fox (1882), Apache (1884), Tonawe (1884), and Potawatomie (1878). They are listed at the end of the

Section on "Kickapoo" in the **Handbook of American Indians, North of Mexico.**

Hibbard, B. H.
"Indian Agriculture in Southern Wisconsin," in **Proceedings,** Wisconsin Historical Society, Madison, 1904.

Hockett, Charles F.
Field Notes on the Kickapoo. The writer was informed by Dr. George Peter Murdock that these materials, collected some ten or fifteen years ago, are available in the files of the Yale Cross-Cultural Survey, located at Room 241, Institute of Human Relations, 333 Cedar Street, New Haven, Connecticut.

Kinietz, W. Vernon.
(See Trowbridge, S. C.

Pierce, Joe Eugene
1952 **Degree of linguistic relationships among the Shawnee, Kickapoo, Ojibwa, and Sauk-and-Fox.** MA Thesis, University of Indiana, Bloomington.

Ritzenthaler, R. E. and Peterson, F. A.
1956 **The Mexican Kickapoo Indians.** Publications in Anthropology, Milwaukee Public Museum, Milwaukee.

Trowbridge, C. C.
The writer calls attention to the following statement appearing in the footnote No. 2, on p. vii of **Shawnee Traditions:**
"Recently uncovered material (of Charles Christopher Trowbridge's now on loan to Mr. Kinietz at the Museum of Anthropology (of the University of Michigan), includes ethnographical material on the Kickapoo, Delaware, Chippewa, and Shawnee, an additional copy of the Miami manuscript, and a grammer of Delaware."

Wilson, Houston Clyde
1953 **The Kickapoo Indians: an ethno-history.** MA Thesis, University of Texas, Austin.

Interesting Wisconsin Specimens

COPPER NEEDLE

Found in Green Lake County. Length 4 3/16 inches, eye length ⅜ inches. Bruder Collection.

COPPER KNIFE

Ulu type with blade 5 inches wide. Waupaca County. Bruder Collection.

BOB HALL of the LINCOLN-TALLMAN MUSEUM, Janesville spent weekends in July and August excavating the Carcajou site on the north end of Lake Koshkonong in Jefferson County. Members of the Society and friends who gave him a hand include: ALLEN PRILL, NEIL OSTBERG, DR. BRUDER, JAMES KACSMAREK, ALVIN BERLIN, CHARLOTTE BELCHE, ERNST BERLIN, EARL PELTIER, GILBERT STENGLA, BARBARA MOHR, NORMA DIAMOND, KATHRYN BARTLETT.

This has been known for a long time as a large Upper Mississippi village site, but Hall's findings reveal some interesting Middle Mississippi elements intermixed.

DR. CHANDLER ROWE, anthropology department, Lawrence College was awarded a National Science Foundation grant for 1957-8 to study Polynesian culture. He will be based in Hawaii.

DR. DAVID BAERREIS, of the University of Wisconsin anthropology department spent the summer in Mexico visiting Museums and archeological sites.

DR. E. G. BRUDER, 1134 W. Burleigh St., Milwaukee has taken over as treasurer of the Milwaukee chapter during Mr. Niehoff's absence in Trinidad.

A WELCOME TO WISCONSIN for DR. VICTOR BARNOUW who in September became the third member of the growing anthropology department at the University of Wisconsin - Milwaukee. Vic, who has been teaching at the University of Illinois, has done field work in India and among the Wisconsin Chippewa.

ABOUT OUR AUTHORS. JAMES SILVERBERG teaches anthropology at the University of Wisconsin - Milwaukee. He has a Masters degree from the University of Wisconsin, has done field work in India and the Southwest. He

came to Milwaukee after a three year stint of teaching anthrpology at the University in Caracas, Venezuela.

The following NEW MEMBERS are welcomed into the Society:

Mary Sellers, Dept. of Sociology, University of Nevada, Reno, Nevada.

Harold Pichotta, Wabeno, Wis.

Theo. A. McKlorkey, 1234 Reed St., Green Bay, Wis.

Shirley Keith, 1353 S. 119 St., Wes Allis, Wis.

Hedley R. Rowe, Jr., 5583 Apple Court, Greendale, Wis.

Wm. F. Inversetti, 202 Monee Rd., Park Forest, Illinois

Robert F. Black, Dept. of Geology, University of Wisconsin, Madison, Wis.

Peter E. Merchdorf, P. O. Box 486, Wabeno, Wis.

Kathryn Bartlett, 3723 W. Sarnow St., Milwaukee, Wis.

Robert Becker, Box 206, Fish Creek, Wis.

Norman L. Johnson, 212½ W. 3rd St., Beaver Dam, Wis.

Bess T. Dunn, 212 Julian St., Waukegan, Illinois.

Donald Crouch, 973 W. Court St., Piggott, Arkansas.

Bob Ritzenthaler, Editor

THE WISCONSIN ARCHEOLOGIST

THE OLD COPPER CULTURE OF WISCONSIN

Edited by Robert Ritzenthaler

KANSAS CITY, MO.
PUBLIC LIBRARY

APR 18 1958

WISCONSIN ARCHEOLOGICAL SOCIETY

Milwaukee, Wisconsin
Incorporated, 1903

For the purpose of advancing the study and preservation of Wisconsin Indian Antiquities.

Meets every third Monday of the month at the Finney Neighborhood Library, Sherman and North Avenue, Milwaukee. (Except during July and August.)

OFFICERS

PRESIDENT

Kirk Whaley

VICE-PRESIDENTS

H. W. Cornell
Ellis Burcaw
Herman O. Zander
Laurence Kracht
Dr. D. A. Baerreis

DIRECTORS

Dr. R. E. Ritzenthaler
Kermit Freckmann

ADVISORY COUNCIL

Frank Achen
Wm. K. Andrew
H. S. Breitwish
Dr. E. G. Bruder
Edw. Eichenberger
W. E. Erdman
Patricia Ewen
Kermit Freckmann
William Godfrey
Robert L. Hall
M. F. Hulbert
Zida C. Ivey
A. E. Koerner
Mrs. Theo. Koerner
Dr. H. W. Kuhm
Robert Maher
W. C. McKern
Robert Menten
Louis Pierron
Arthur W. Quan
J. Ringeisen, Jr.
Chandler W. Rowe
Chas. G. Schoewe
Paul Scholz
Lincoln Smith
Albert Vidas
Dr. A. C. Whiteford
Warren Wittry

TREASURER

Arthur Niehoff, Milwaukee Public Museum, Milwaukee 3, Wis.

SECRETARY

Phil H. Wiegand, 1276 N. 63rd Ct., Wauwatosa 13, Wis.

EDITOR

Robert Ritzenthaler, Milwaukee Public Museum, Milwaukee 3, Wis.

MEMBERSHIP FEES

The Wisconsin Archeologist is distributed to members as part of their dues.

Life Members, $50.00
Endowment Members, $500.00
Sustaining Members, $5.00
Annual Members, $2.00
Institutional Members, $2.00

All communications in regard to the Wisconsin Archeological Society and contributions to the Wisconsin Archeologist should be addressed to Phil H. Wiegand, 1276 N. 63rd Ct., Wauwatosa 13, Wis. Entered as Second Class Matter at the Post Office at Lake Mills, Wisconsin under the Act of August 21, 1912. Office of Publication: 204 N. Main St., Lake Mills, Wis.

TABLE OF CONTENTS

THE OSCEOLA SITE, An "Old Copper" Site Near Potosi, Wisconsin, Robert Ritzenthaler ---------- 186

A PRELIMINARY STUDY OF THE OLD COPPER COMPLEX Warren Wittry 204

THE OCONTO SITE—An Old Copper Manifestation ------ Robert Ritzenthaler and Warren L. Wittry 222

THE BURIAL COMPLEX OF THE REIGH SITE, Winnebago County, Wisconsin, David A. Baerreis, Hiroshi Daifuku and James E. Lundsted 244

REIGH SITE REPORT—Number 3, Robert Ritzenthaler with reports by Neil Ostberg, Kirk Whaley, Martin Greenwald, Penny Foust, Ernest Schug, Warren L. Wittry, Heinz Meyer, and Edward Lundsted. 278

THE OLD COPPER COMPLEX: An Archaic Manifestation in Wisconsin, Warren L. Wittry and Robert Ritzenthaler 311

THE COLLECTOR'S CORNER ---------- 329

THE WISCONSIN ARCHEOLOGIST

Published Quarterly by The Wisconsin Archeological Society

New Series

MILWAUKEE, WISCONSIN, DECEMBER, 1957

Preface

This volume brings together under one cover the major articles on the Old Copper culture which have been previously published in **The Wisconsin Archeologist.** The primary reason for so doing is to again make available these articles, the demand for which having exhausted the supply of the particular issues in which they appeared. We have also included an article published in **American Antiquity** (January, 1956) which provides summary and comparative material on the various manifestations of Old Copper in Wisconsin.

The last twelve years have been fruitful ones in establishing the cultural and temporal position of Old Copper. During this period the first actual sites were discovered and excavated: Osceola (1945), Oconto (1952), and Reigh (1953). While the original excavations left some doubt as to whether Reigh should be considered Old Copper, subsequent explorations have produced materials that leave no question in the writer's mind that this is another Old Copper site. These sites, then, for the first time, tied up the copper artifacts with a lithic-shell-bone-antler complex, and burial customs. Besides establishing a cultural complex, one site, Oconto, provided us with radio-carbon dates of 5600 and 7510 years ago to establish Old Copper as the earliest known horizon in Wisconsin, and one of the earliest Archaic sites in the Northeast.

While much has been learned about Old Copper, it must not be thought that the picture is complete. There are still some very basic and intriguing problems to be solved. For example, its relationship with other cultures either in the State or without has not been determined. If Wisconsin was the center of this culture (as seems obvious) was the northeasterly thrust into Ontario a later migration? From whence did these people enter Wisconsin? Which of the three sites is the oldest. These, and other challenging questions, remain to be answered by future work.

THE OSCEOLA SITE

AN "OLD COPPER" SITE NEAR POTOSI, WISCONSIN

By Robert Ritzenthaler

1. The Problem

While a considerable number of copper artifacts have been found in Wisconsin, only certain types have been definitely associated with known prehistoric cultures of Wisconsin. The rest, obtained as surface finds, have been lumped together and termed "The Old Copper Complex," or "The Old Copper Industry" with the suggestion that they might represent an old culture distinct from any of the four known prehistoric cultures of Wisconsin. It was known that all four groups made some use of copper with the Hopewellians making the most extensive use of it. The following is a list of the artifacts by culture as shown before the Osceola excavation:

WOODLAND

1. Ungrooved Axes (or wedges). Angular in outline and rectilinear in cross section.
2. Awls. Double-pointed, square (usually) or round in cross-section. These have been found only with the Effigy Mound Aspect of Woodland.

UPPER MISSISSIPPI

1. Tubular beads.
2. Pendants. Cut out of sheet copper and perforated for suspension.

MIDDLE MISSISSIPPI

1. Arrow points. Triangular with side and basal notches (rare).
2. Irregular fragments.
3. Disk-shaped ornaments. With concentric corrugations.
4. Copper Overlay. A thin copper covering over such stone artifacts as ear spools.

HOPEWELL

1. Beads. Both cylindrical and ellipsoidal in shape.
2. Pendants.
   a. Rolled cones.
   b. Cut-out squares perforated near one edge.
3. Ear spools.
4. Breastplates. Rectangular with two widely spaced perforations near one edge.

5. Headplates. Squared with curve from front to back to fit the head.
6. Whistles. Two or three reed or wooden whistles arranged side-by-side, entirely encased in sheet copper.
7. Celts. Made of sheet copper folded and refolded. Rectilinear in cross section, sides expanding slightly from base to square or convex bit.
8. Awls. Double pointed, square in cross section.

All other artifacts were tentatively listed as belonging to the Old Copper Complex and included such materials as socketed "spuds" and gouges, rat-tailed spear points and knives, socket-tanged spear points and knives, spatulate-tanged spear points and knives, pikes, fish-hooks and harpoons, none of which had been found **in situ** previous to the discovery at Osceola. This fact accounted for the interest in and the importance of the Osceola Site.

2. LOCATION AND DISCOVERY

The Osceola Site is located on the banks of the Mississippi River about two miles south of the town of Potosi in Grant Coun y, Wisconsin. In more precise terms it is to be found in the NW¼ of Section 14, T. 2, N. Range 3, W. of 4th Principal Meridian. It was formerly the site of a steamboat landing known as Osceola Landing with a small settlement nearby which was decimated by a cholera plague about one hundred years ago, the survivors moving up to Potosi. Up to eight years ago this was the bank of the Grant River. but the installation of a dam at Dubuque raised the water and widened the Mississippi at this point. The site was discovered in May, 1945 by two fishermen, Ralph Turner and Victor Irish who saw some artifacts projecting from the bank which had been undercut by the action of the river. Their find was investigated by Edwin Goke and John Grindell of Platteville who reported the discovery to the Wisconsin State Historical Museum and to the Milwaukee Public Museum.

In June the writer went to Potosi to investigate. The specimens already removed by private collectors were examined and found to include "Old Copper" types. A test trench three feet wide and twelve feet long was sunk to determine, if

possible, the cultural affiliations, stratigraphy, and depth and richness of the deposits. A copper knife, 18 copper awls, some chipped-stone artifacts, and skeletal material were removed and returned to the Milwaukee Public Museum for examination. On the basis of the information obtained it was decided to excavate the site, and Mr. John Douglass and the writer, both of the Anthropology Department, left in August to begin work.

3. Description and Excavation of Pit

The site was cleared and laid out in 10-foot squares with the aid of a transit and stadia rod. A series of test pits revealed that the burial pit extended about 70 feet along the bank, and was about 20 feet wide at this time, but it must have been considerably wider originally judging from the amount of material washed into the river. The length of the pit was easily determined by an examination of the bank profile. The pit fill is made up of very black sand which fades into the ordinary yellow beach sand at either end. An analysis of the black sand showed it to be ordinary light-colored quartz grains encapsulated with humus thus giving it a deep black appearance. The source of this material was not determined, but a few hundred feet upstream another deposit of black sand along the bank proved to be sterile.

The average depth of the pit was 5 feet, and was easily determined by the abrupt change from the black sand to the yellow sand of the old beach. The burials were in the bottom layer from about 2½ feet to 5 feet below the turf. All the copper and most of the other artifacts were found in this bundle-burial layer.

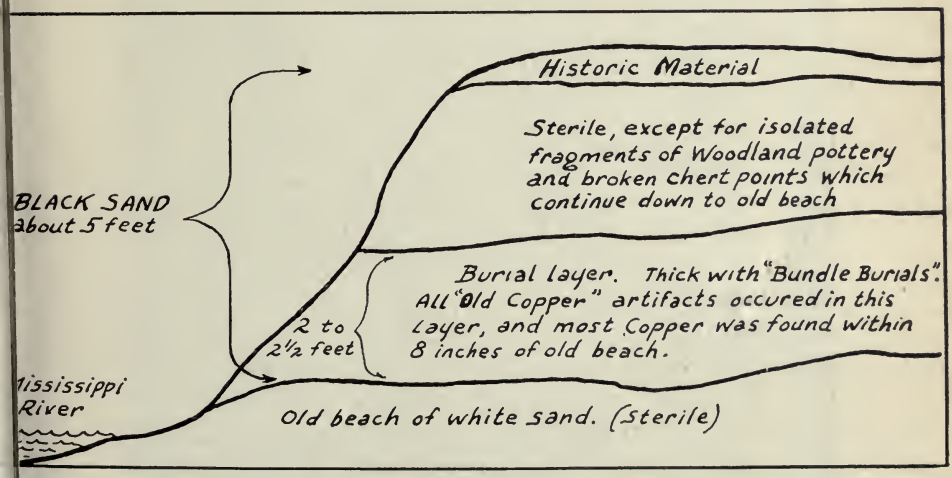
Our method of excavation was to strip a square down to the top of the bundle-burial layer, and then profile it down to the old beach. The artifacts were scattered through the bundle-burial layer, in some cases associated directly with a burial, but in most cases unrelated. The scattering of broken implements, chert chippings, and pottery fragments from a few inches below the turf all the way down to the old beach level indicated that the fill had been taken from a campsite, a Woodland campsite on the basis of the Woodland pottery fragments. These pottery fragments were our first clue as to

relative dating, for they proved that all material in the pit was post-Woodland, or at least contemporaneous with Woodland. Both burials and artifacts were most numerous near the center of the pit and faded out toward the edges. However, the artifacts were most concentrated at the center and faded out rapidly although the burials continued.

4. Artifacts

Briefly summarized, the Osceola complex consisted of the following traits: a variety of unique copper implements and ornaments; well-made chipped stone implements, made by primary flaking with secondary retouching, including a distinctive type of projectile point with side notching and a straight or concave base, and a concave-based drill; flat smoothing stones irregular in outline; and disposal of the dead by single or multiple bundle-reburial. No pottery could be definitely assigned to the complex.

The following is a list of the materials which will be discussed under the headings of copper, stone, burials, and pottery. Some of the materials described are in the collection of Mr. Edwin Goke of Platteville and Mr. R. Jamison of Beetown.



Cross-section of Burial Pit

PLATE 1. Five Copper Awls found together. Apparently a set.

1. Copper

All Wisconsin copper specimens previously analyzed have shown that the source of the copper was from the Lake Superior region, and it is logical to assume that this was also the source of the Potosi material. Lake Superior copper is identifiable as more than 99% pure with only slight traces of iron, silver, cobalt, arsenic, and nickel. The two methods of working copper were cold hammering and annealing. The tempering of copper was not known to the Indians nor is there any method known to modern metallurgy. All the copper implements from the site were covered with a heavy green patination due to the formation of copper salts.

A. Implements

1. Awls (Plate 1)

These were by far the most numerous of the copper artifacts. We found 21, and there are about a dozen more from this site in private collections. All but two of these were square in cross section and double-pointed. One exception was rounded in cross section. The other was square in cross section, but instead of being double-pointed had one end blunt and flattened. The awls varied in length from 3¾ to 10 9/16 inches and in center width from 3/16 to ⅜ inches. In three cases they occurred in sets of from three to six, with each set having a variety within it as to length.

Two of the awls showed clearly that they had been hafted (Plate 2). In each case the presence of a handle had prevented heavy patination leaving only a light smoth patina in the area covered by it. One of these, 7¼ inches long, had a haft mark 1 5/16 inches in length, while the other, 9⅜ inches long, had a hafted surface ⅞ inches in length. No remains of the handles were found. That these implements were used as awls for such purposes as punching holes in skin garments for sewing or lacing has been the most com-

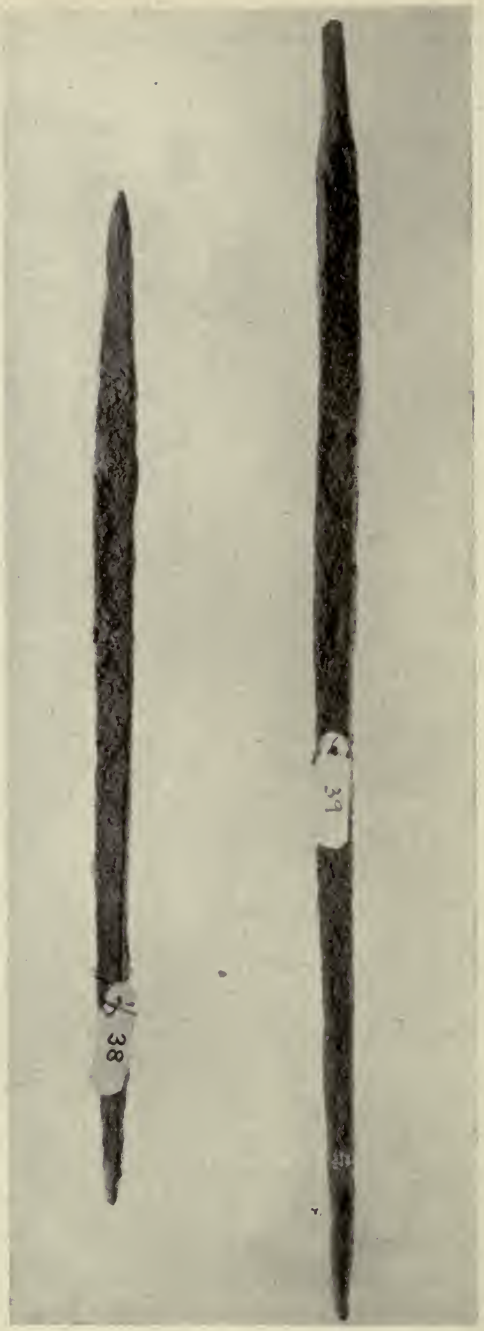


PLATE 2. The upper ends show obvious hafting marks

men hypothesis. The majority found at Potosi would serve very well for this purpose. On the other hand we found some as long as 10½ inches. Add to this a 4 inch handle, giving a total length of from 13 to 14 inches and you have a tool which would seem to be rather clumsy for use as a perforator.

2. Spuds (Plate 3)
   A total of 6 socketed "spuds" were found all with expanding bits and dorsal hafting flanges.
3. Socket-tanged spear points (Plate 4a)
   Two of these were found.
4. Knives (Plate 4c)
   One spatulate-tanged knife 5¼ inches in length.
5. Socketed conical points (Plate 4b)

B. Ornaments

1. Beads (Plate 5, a)
   Sheet copper rolled into tabular form. We found all occurring singly.
2. Clasp or clip (Plate 5, b)
   A piece of sheet copper ¼ inch wide bent to form a clasp 9/16 inch long.
3. Bracelet ? (Plate 5, c)
   A band of copper ⅛ inch wide bent to an oval shape 1½ by 2¼ inches in cross dimensions. If this is a bracelet it would only fit a small child.
4. Hooked object (Plate 5, d)
   A band of copper 3/16 inch in width with a hook at one end, and the other end broken but indicative of having been curved into a similar hook. The lightness of construction suggests an ornamental rather than utilitarian use.
5. Ring (Plate 5, e)
   ⅛ inch wide with outer diameter of 13/16 inch.
6. Open Ring (Plate 5, f)
   Of flat sheet copper 3/16 inch wide, with an outer diameter of 1⅞ inches, and an opening of ⅝ inch.

PLATE 3. Socketed Spuds

2. Stone

A. Chipped stone

The stone-working technique consists of primary flaking with secondary retouching along the edges.

PLATE 4. Spear point, socketed point, knife

The quality of workmanship is good and in many cases excellent. Chert was used almost exclusively.

1. Projectile Points (Plate 6)

   Ellipsoidal in shape with side notches, concave based or, less frequently, straight based. Range in length from 1¼ to 5 inches.

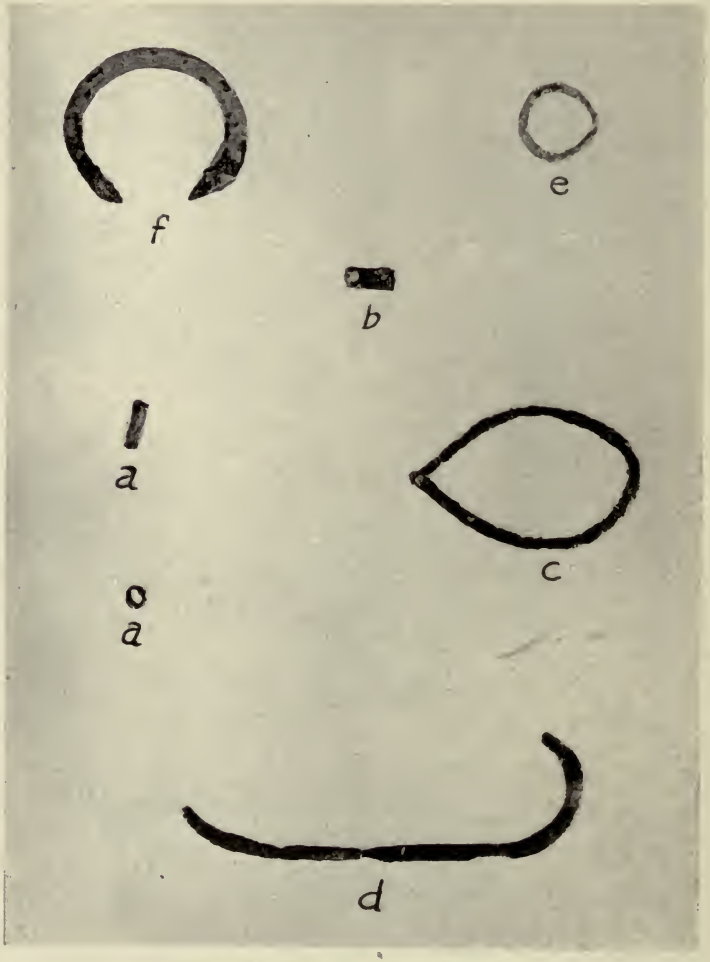


PLATE 5. Copper Ornaments

2. Drills (Plate 6)
   Slender, expanding at the base, with truncated basal extensions and concave base; or slender, with triangular base.
3. Scrapers (Plate 6)
   Snub-nosed, with side notches, and straight base.

B. Unworked stone
   1. Smoothing Stones (Plate 7, a)

Flat stones irregular in outline, and showing abrading use on one surface. Abrading surface may be flat or slightly convex.

2. Hammerstones (Plate 7, b)

Two showing evidence of usage at one end.

3. Miscellaneous

A. Unworked galena cubes

These were apparently picked up in their natural state by the Indians. About 20 were found occurring in various levels from top to bottom, and none showed the slightest trace of having been worked.

B. Clay wads

Wads of gray clay an inch or two in diameter and several in a group occurred sporadically in the bundle-burial layer.

C. Red Ochre

Small lumbs of red ochre occurred rarely. There was no indication of their having been used on the bones or artifacts.

D. Animal remains

Few animal remains were uncovered and all were found in the bundle-burial layer. They include several fragments of deer mandible, one piece of a raccoon mandible, part of the distal end of a buffalo humerus, a buffalo molar, and a section of the carapace of a soft-shelled turtle.

4. Burials

We estimated the number of individuals buried here to be 500. As much of the skeletal material had been dug up and either strewn about the site or carried off before we arrived, this can only be a very rough guess. If the figure is even approximately correct it makes Osceola the largest burial site thus far discovered in Wisconsin.

The burials occurred in a strata running approximately 2½ feet to 5 feet below the turf. In many cases the Osceola artifacts did not occur directly with the burials, but were in all cases in the same stratum. The method of disposal was, with one exception, by bundle-reburial,

either single or multiple. By this method the bodies are left exposed until the flesh is gone. The bones are then gathered up and buried in a more or less compact bundle. This type of burial was employed by some of the historic Plains Indians who wrapped the body of the deceased in buffalo skins, and placed it on a specially constructed pole scaffold.

There was no attempt at orientation of the bones. Their condition was poor. Only four more or less complete skulls were obtained, as were a few nearly intact long bones. In many cases even the teeth, the most dense part of the human body, would crumble if held lightly in the fingers. In instances only fragments of bone were preserved due to contact with copper.

Besides ordinary secondary reburial we found numerous examples of partial cremation. In three instances we found stone-capped graves, in which a layer of small stones was places directly over the burial. The one flexed burial, a characteristic Woodland burial technique, occurred at the south end of the pit with the other intrusive Woodland material. The relatively good state of preservation of the flexed skelton indicated a much more recent interment than the Old Copper burials.

The large number of individuals in the burials raised the question as to whether this was an ordinary cemetery or a mass burial due to a cataclysm such as battle or plague. That they were not all buried at one time was indicated by the fact that the skeletal material at the bottom of the pit was in the poorest condition. If a plague had struck the group a more representative cross section of the population would have been affected.

5. Pottery

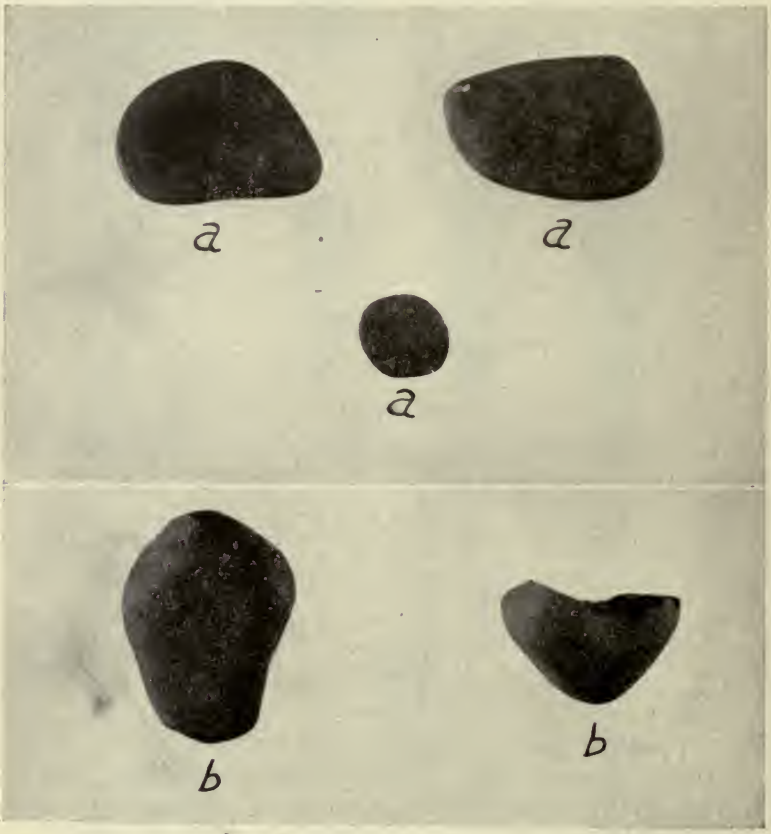
While pottery was encountered in the bundle-burial layer, it could not be considered a part of the Osceola complex. Single, small sherds occurred sporadically from within a few inches below the turf down to within six inches of the old beach. All were of Woodland type with grit temper and cord marking, which indicates that the fill was obtained from a Woodland Campsite. Near the

Drills Points Scraper

PLATE 6. Chipped-stone

south end of the pit a number of large fragments of a Woodland pot were found occurring from about six inches above the old beach to within two feet of the surface. Enough of the vessel was recovered to make a restoration possible (Plate 8). It was, however, in this area that the Osceola material was fading out and Woodland appearing. The black soil became lighter toward the south end of the pit where Woodland stone artifacts, a flexed burial, and the Woodland vessel were found.

Smoothing Stones



Hammerstones

PLATE 7. Unworked stone

There was a marginal area in which both Osceola and Woodland material was uncovered, but the Osceola faded out the farther we penetrated to the south, and the intrusive Woodland material became stronger.

6. Conclusion

As to the problem of cultural affiliations, the evidence

PLATE 8. Restored Woodland Vessel

points to the conclusion that the Old Copper Complex is a manifestation most resembling Woodland, although probably pre-pottery. The predominant use of primary flaking in the making of chipped-stone artifacts suggests Woodland. While the Osceola projectile points and drills are quite distinctive in shape, they fall within the typological class assigned to Woodland. The burial methods are characteristically Woodland including such elements as single and multiple bundle-reburial, partial cremation, and stone-capped graves. Although copper is rare for Woodland, it is encountered in the Effigy Mound aspect to the extent of ungrooved axes and awls. Axes of this type have not been associated with the Old Copper Complex, but the square in cross section awls qnite ccmmon in the Complex are of the same type as those of the Effigy Mound culture, and round in cross section awls are present, but rare, in both cultures. It should be noted, however, that the square awl is also fairly common in Hopewell.

While nothing was discovered to disturb the assumption that the Old Copper Complex is the oldest cultural manifestation in Wisconsin, it was found that it did persist as late as Woodland. That it was either contemporaneous with or later than this one local Woodland manifestation is demonstrated by the fact that earth from a Woodland campsite was used as fill for the burial pit. The age of Osceola culture can only be surmised, for there is no means of accurately dating such a site. A rough estimate of 1000 years for its age may be given based on three facts. First, the consistently poor state of preservation of bones, comparable to Hopewellian burials in the same area and in contrast to the better state of preservation in other and later manifestations, argues for age. Secondly, antiquity is also indicated by the heavy patination and deep acid erosion characterizing the Old Copper implements, including the Osceola specimens, in contrast to the thin patination on the sheet-copper specimens of the Mississippi peoples who are known to have existed at a relatively late date. Thirdly,

by the time of White contact the Indians had forgotten the art of working copper. If the Woodland hypothesis is correct then the later Woodland peoples developed pottery and polished stone techniques at the expense of copper and quality of chipped-stone workmanship. It would also mean that here is the earliest evidence of the forerunners of the historic Woodland tribes such as the Menomini, Chippewa, Sauk, Fox, Kickapoo, and Potawatomi.

Perhaps the major contribution of the site was in the securing of at least a simple cultural complex including Old Copper artifacts. Heretofore such copper artifacts hung in limbo, but Osceola tied them in with a chipped-stone industry and a burial complex. This should prove useful in future archaeological work on the problem. Actually all we know about these people is what has been told from one cemetery. The finding of a camp or village site would add much to the picture.

As to the wider affiliations of Old Copper it has been suggested by such men as McKern and Linton that there may be a connection with more northerly peoples of the continent, or even extending into western Asia. Similar shape types have been found in Ritchie's Laurentian material in northeastern New York, which at its earliest is a pre-pottery manifestation. Rat-tailed spear points are reported for Athabascan sites in Alaska. A number of Eskimo implements, while of bone and slate rather than copper, show astonishing similarities in shape. Socketed axes and gouges of metal from western Asia provide a further clue to the possible source of the shapes of Old Copper implements. This theory was proposed more to raise the question than to settle it, and if it provokes investigation it will have served its purpose.

A PRELIMINARY STUDY OF THE OLD COPPER COMPLEX

By Warren L. Wittry

To anyone familiar with Wisconsin archeology, the Old Copper Complex represents some of the finest examples of aboriginal workmanship to adorn the collectors' shelves or the museums' exhibits. For three-quarters of a century these copper specimens have been collected and have caused much discussion and controversy. The early studies and discussions were concerned with the sources of the copper, the methods of mining and the techniques of manufacturing the implements. Through the years and not without some aid from the geologists and metallurgists the initial problems have been solved. But to the archeologist, whose tasks include the definition of prehistoric cultures and their proper placement in time and space, the Old Copper Complex still presents an interesting challenge. We shall not be concerned here with reviewing all the contributions relative to these questions that are available whether they be fact or theory because it would tend to be repetitious and lengthy. A selected bibliography is presented with this paper giving some of the more important references.

What, then, is the purpose of this paper? It is to attempt a further definition of the Old Copper Complex and its problems, to apply some new techniques, and to suggest some conclusions that may be drawn from the data obtained by these applications.

Copper artifacts which have come to be included in the Complex are almost always utilitarian. They are mainly projectile points, knives, axes, preforators and crescentic forms of a somewhat doubtful function. Characteristically, a coating of copper salts which covers the surfaces of the specimens has been one of the chief reasons for attributing to them a relatively great age, though soil conditions, particularly its chemical nature, will cause variations in degree and kind of patination. The exceedingly pure native copper of the Lake Superior region was used, being obtained by open pit mining on the Keweenaw Peninsula (Upper Michigan) or Isle Royale (Lake Superior). Nuggets of copper transported

south from the area by the glaciers were also used. Methods of manufacture included the hammering of both hot and cold pieces, but in either case repeated annealing was necessary because copper becomes hard and brittle when hammered. It can not be tempered. By an examination of chips and waste pieces and the artifacts themselves, it is concluded that cutting and grinding were part of the process. Melting and casting were unknown to the makers of the Old Copper tools and this is an important point for it imposed a limit on the possible variations in form.

Except for a few dozen, all of the Old Copper pieces were picked up individually — in plowed fields, sand blows and areas of soil erosion. Only one site in Wisconsin has been excavated which produced a limited number of types (Ritzenthaler, 1946). A few types were discovered in association with caches. In distribution, Old Copper types range over a large portion of North America but they are highly concentrated in Wisconsin and neighboring states.

Some specific problems raised by these artifacts might be posed. "Who were the people that made and used these copper implements? Where and when did they live?" But the most important question is, "How do they fit in the scheme of Wisconsin prehistory?" Various hypotheses have been advanced in answer to these questions (McKern, 1942; Martin, Quimby and Collier, 1947; Ritzenthaler, 1946; Miles, 1951), each using the data available at the time. It is hoped that the techniques and conclusions suggested here will prove useful for the answers yet to come.

The basic approach used was to work primarily with the specimens in the collections of three museums in Wisconsin [1]. The information which accompanied the specimens was tabulated, though in most cases it pertained only to the location

[1] In all, some 2,600 specimens were examined, typed and plotted on distribution maps. They are located in the Museum of the State Historical Society of Wisconsin, Madison; The Neville Public Museum, Green Bay; and the Public Museum of the City of Milwaukee. Thanks are due to J. W. Jenkins, E. G. Wright and W. C. McKern, the directors of the museums, respectively, for their cooperation; and to Dr. D. A. Baerreis who made helpful suggestions both in the study and in the writing of this article.

of discovery. The first step was to break down the aggregate of specimens into smaller groups in order to deal with them more particularly. This was effected by the construction of a typology, or system of classification. This is not the first classification of copper implements, there being three predecessors which were consulted in order to make it as comprehensive as possible (Brown, 1904a, 1904b; West, 1929; Flaskerd, 1940).

In the descriptive analysis of artifacts there are found a number of traits related to the various aspects such as material, manufacturing techniques, elements of shape, and so on. These traits are called **features.** However, certain of those features are common to all forms of the Old Copper Complex and therefore can be ignored in the segregation of types. They are really part of the definition of the Complex as we now know it and consist of the following: One universal feature is material, i. e., native copper whether it came from the mines or the glacial drift is assumed to be used for all the varieties. Another such feature is the method of manufacture which is presumed to be so basically similar for all forms that it has no importance in the further breakdown. Because forms and function are so interrelated and the uses of the majority of forms is obvious or inferred by their shape, it is specific variations in shape that are used as the basis for the construction of the typology. Using the traditional categories of projectile points, knives, crescents, spuds, etc., the copper implements were further separated into groups which had the same features and the same combinations of features. The original shape of the artifact as it was made is used rather than the present condition. Fortunately, the shape is quite discernable in the majority of specimens. Cases of recent mutilation can be easily recognized. This segregation resulted in quite a large number of groups but this number was retained for the sake of continuity within each group. The resulting groups are called **types** although they are actually only tentative types as they lack adequate data on their utility for historical studies. A true type, which is limited in its areal, temporal, and cultural distributions, is of considerable use to the prehistorian. The types have been given Roman

numerals to designate the major group; for instance, all projectile points are headed by the Roman numeral "I," knives by "II," and so on through the major classes. Under those headings, the specific types are lettered. Instances where forms are closely related by having a majority of features in common but differing in only one or two have been classed as sub-types and are so designated by the addition of an Arabic number to the type symbol. For all purposes sub-types can be treated as types until their status is more fully realized. The whole typology is only a device of convenience by which other techniques can be applied to the problems of the Old Copper Complex.

Although features are components of types, they can and do occur in more than one type. For example, median ridges, beveled edges, rivet holes, and pointed bases each occur on several types. The distributions of features, then, will be more extensive than the distribution of individual types. Distributional data on features can be treated in the same manner as types and at times may be very useful in broader implications.

To give temporal values to types by constructing typological seriations on the basis of complexity or degree of technical advancement is, indeed, unreliable as degeneration is possible as well as progressive improvement. Also, in connection with the Old Copper Complex, if it did last long enough for changes to take place in the types there is the possibility that some types may have remained stable while others changed.

For a long time the metal and ornaments of the Bronze Age of Europe presented a somewhat analogous situation to what we have with the Old Copper Complex. The problems were solved in Europe in part by the use of hoards or caches which are defined as the discovery of artifacts under the circumstances indicative of contemporary use. Other techniques successfully applied to the Bronze Age artifacts of the Old World were concerned with the geographical distribution of types and their distributions along trade routes established by the discovery of other commodities, notably amber (Childe, 1930, pp. 42, 46-48). That trade routes were present in prehistoric times in North America, can hardly be doubted. How-

ever, they have not been defined well enough to permit their use here. Moreover, the distribution of all Old Copper forms is so concentrated in and about the state of Wisconsin that the actual migration of people as well as trade or diffusion may account for a good deal of the dispersion illustrated in Figure 4.

Differences which the reader may note between the following typology and the others can be attributed to two factors. First, criteria used to differentiate varieties in the other classications were not found to be significant by the present writer, and secondly, the present typology is more rigid. causing each type to be more homogeneous. On the whole, the artifacts appeared to fit rather nicely into the types, suggesting that the cultural standards for their manufacture were well defined. Some of the forms such as the flat axes or celts did not readily "fall" into types so they were arbitrarily divided into three types depending on a rectanguloid, trianguloid, or ovate rectanguloid outline. Unique specimens, that is, those forms for which there is only one example, are not included in the classification. Figures 1, 2 and 3 should give an adequate conception of the types. [2] However, type I-A, the most common variety of projectile point is divided into two subtypes which will be discussed in more detail below.

The types were studied by two major techniques. One of these may well serve as one means of checking the validity of the types and subtypes. In addition to plotting the total distribution of all types in Wisconsin (Figure 4), each type was plotted separately. [3] In at least 90 per cent of the cases locational information was given as to the civil town in which they were found. In southern and eastern Wisconsin, the civil towns correspond more or less to the government township and range system (most of them are equal to a congressional township) thereby achieving an accuracy within six miles which is entirely adequate for the scale of the maps. Each specimen is plotted individually, that is, a dot on the map represents one specimen. The majority of the remain-

[2] Group XI, not included in the Figures, consists of finger rings.
[3] Photographic copies of these maps are on file in the Museum of the State Historical Society of Wisconsin, Madison.

ing 10 per cent were located by counties and were so plotted by a dot placed in the center of the county. Specimens with no data as to location or with such a vague reference as "southern Wisconsin" were not included.

Rightly, it should be pointed out that collecting techniques may have biased the distribution. All of the large collections of Old Copper artifacts were made by men living in the eastern part of the state, although some of them, through travel and advertizing, extended their activities all over Wisconsin and even the adjoining states. Also, the settlement and particularly the development of farming in the state followed a pattern which was early and intensive in the southern and eastern areas and even now the north has not yet been extensively farmed. Although these factors may account for some distortion in the total distribution, it would seem that their effect on the relative distribution of types is small. Two reasons can be cited for this. First, if a particular type is actually limited in its dispersion, it just will not be found outside its own area. Secondly, we must asume, if we are to interpret the distribution maps, that any particular specimen found will have the same chance as any other type of surviving the pitfalls of being junked or mutilated to be included in a study such as this. The three series comprising the specimens studied represent a significant proportion, probably well over half of the total number that are available at the present time. Thus, the distribution of these specimens is in all probability a very good indication of the actual distribution of the Old Copper Complex and certainly a good representation of the relative number of types.

The value of an intensive typological and distributional study must depend on the conclusions that can be drawn from it. Looking at the map of the total distribution (Figure 4), we can see that the greatest concentrations of specimens are in Manitowoc County on the Lake Michigan shore and inland in and around Washington County in southeastern Wisconsin. Moreover, in these two areas a larger number of different types are represented than in any other region. We can conclude that these areas in eastern Wisconsin are primary centers for the Old Copper Complex. To the west and north of

these are concentrations along the Upper Fox and Wolf Rivers which may be secondary centers either later in time or peripheral to the major centers or very possibly both.

It was stated that distributional data would tend to test the validity of the types and sub-types. Since there is not space here to print all of the maps, one of the more clear cut examples is presented. Projectile point I-A1 is characterized by an elongated triangular blade and a three-sided socketed stem. A median ridge runs down the back of the specimen but the front surface is flat for the entire length. The base is pointed (Figure 1, A). Another sub-type, I-A2 is exactly the same except for the presence of a "step" in the surface of the front face which causes the floor of the socket to be lower than the blade and provides an abutment for the shaft. When the distributions of these two sub-types were plotted (Figures 5, 6), it was noted that each of them fell into the total pattern, but that I-A1 was predominantly concentrated in the primary centers of Washington and Manitowoc Counties. The reverse is true for I-A2. It is concentrated in the secondary centers of the Wolf and Upper Fox River Valleys, and is more limited in its distribution. This distributional data coupled with the fact that I-A2 is a more complicated variant indicates that it is a later type. Similarly, sub-type I-G2, type I-H and type I-K are found mainly in the secondary centers and may be late types within the Complex. Though no measurements were made it appeared as the specimens were examined that I-A2 and I-G2, later types of the secondary centers, were larger than their allied types I-A1 and I-GI. This would be, of course, another way to substantiate the validity of types.

Distributional data of this nature has also operated to the other end. When the original shape classification was set up, type I-B was divided in two on the basis of whether there was a rivet hole (or rivet) or not. Specimens with the hole outnumbered those without, but there were no differences to be found in the patterns of the two distributions. Consequently, they are now combined into one type. In general, the remaining types seem to fall into the pattern of total distribution, but in the case of many types there are too few

specimens plotted at the present time to warrant any conclusions beyond the fact that they all have the same general distributions.

The second major technique applied to the Old Copper artifacts was an analysis of their occurrence in caches. The tabulation lists some of the caches found in Wisconsin. The writer is aware of others which are not included either because they contained only one type of artifact or the specimens were not available to determine their exact type. Although the copper specimens recovered at Osceola are tabulated they, of course, do not represent a cache. With the number of burials estimated at 500 and with some burials better preserved than others, it is logical to assign a relatively long period of time for the formation of the cemetery (Ritzenthaler, 1946, pp. 64, 65). Nevertheless, the fact that several different types were found there makes it necessary to include this data.

What the tabulation demonstrates is the association of certain types of Old Copper Complex with others. This is shown concretely within each cache. However, another sort of association can also be observed. When one type, such as III-A occurs in several caches it serves as a link to the otherwise unassociated types occurring in the different caches. Other types than III-A also operate in that manner so that all of the types shown on the table are related into a broad association, graphically illustrating a continuity in the Old Copper Complex of obvious significance. Naturally, it is quite improbable that all of the caches were made at the same time. The caches could represent a period of time during which all of the types were in common use or alternatively, some caches may be significantly older than others — in which case the linking types would have been stable forms that remained unchanged while older types were replaced by new ones. It would be difficult to determine the direction of the sequence, however. The study of the caches, nevertheless, does serve to determine which types are to definitely be included as part of the Old Copper Complex.

A striking outcome of the map of total distribution is the remote location of the Osceola site in relation to the primary and secondary centers. It might be questioned whether Os-

ceola is a true manifestation of the Old Copper Complex. Admitting the possibility that new discoveries might fill in more completely the intervening area, we cannot omit the result of trade.

The conclusions derived through the techniques used in this study are tentative. Nothing has been stated concerning the real questions which were posed in the early part of the paper. In that respect we must realize not only the utilities of the methods used but their limitations. The distribution maps and the analysis of cache associations served their most important functions in demonstrating a certain amount of coherence to the various types of copper implements which previously were combined into a complex only because they seemed to belong together by their utilitarian nature and heavy patination. Primary and secondary centers were proposed for the Old Copper Complex and a few of the types were suggested as being later than others. We are seeking information on these elusive aborigines who are necessarily characterized now only by their use of particular copper tools and, if Osceola is an Old Copper site, by a few other material traits and a burial complex. These things were only a small portion of their total culture.

A SELECTED BIBLIOGRAPHY

Brown, Charles E.
1904a. "Native Copper Implements of Wisconsin." **The Wisconsin Archeologist,** Vol. 3, No. 2.
1904b. "The Native Copper Ornaments of Wisconsin." **The Wisconsin Archeologist,** Vol. 3, No. 3.

Childe, V. Gordon
1930. **The Bronze Age.** Cambridge, England.

Flaskerd, George
1940. "A Schedule of Classification, Comparison and Nomenclature for Copper Artifacts in Minnesota." **The Minnesota Archeologist,** Vol. VI, No. 2, pp. 35-50.

Holmes, W. H.
1901. "Aboriginal Copper Mines of Isle Royal, Lake Superior." **American Anthropologist,** n. s., Vol. III, pp. 684-696.

Houghton, J. J.
1879. "Ancient Copper Mines of Lake Superior." **Wisconsin Historical Collections,** Vol. VIII, pp. 140-151.

Martin, P. S., G. I. Quimby and D. Collier
1947. **Indians Before Columbus.** Chicago.

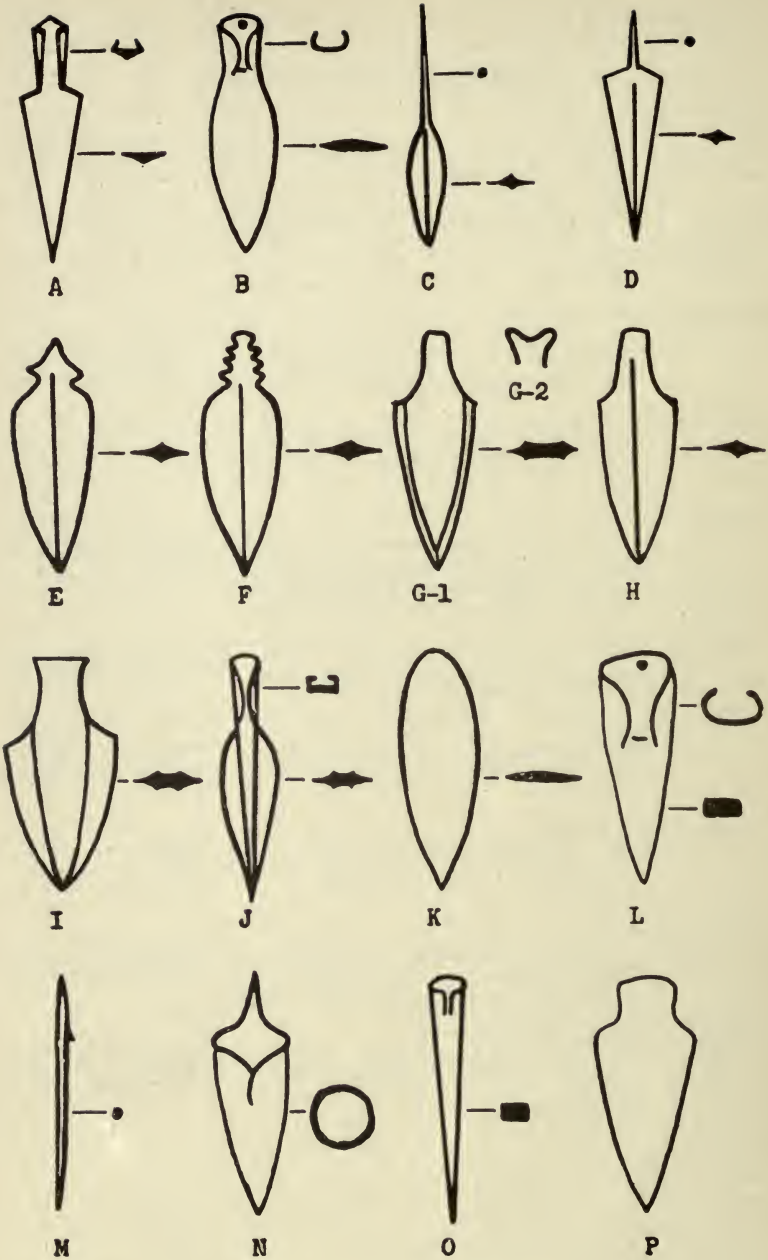
McKern, W. C.
1942. "The First Settlers of Wisconsin." **Wisconsin Magazine of History,** Vol. 25, pp. 153-169.

Miles, Suzanne W.
1951. "A Revaluation of the Old Copper Industry." **"American Antiquity,** Vol. XVI, No. 3, pp. 240-247. Salt Lake City.

Ritzenthaler, Robert
1946. "The Osceola Site—An 'Old Copper' Site near Potosi, Wisconsin." **The Wisconsin Archeologist,** n. s., Vol. 27, No. 3.

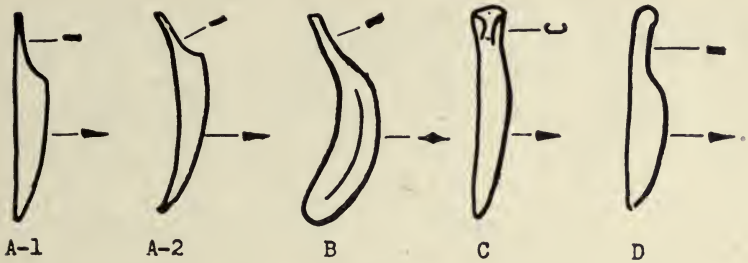
West, George A.
1929. "Copper: Its Mining and Use by the Aborigines of the Lake Superior Region." **Bulletin of the Public Museum of the City of Milwaukee,** Vol. 10, No. 1.

Wilson, Curtis L., and M. Sayre
1935. "A Brief Metallographic Study of Primitive Copper Work." **American Antiquity,** Vol. I, No. 2, pp. 109-12. Menasha.

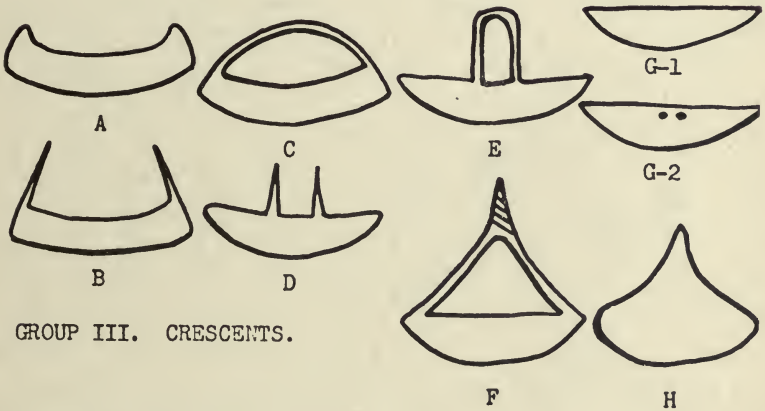


GROUP I. PROJECTILE POINTS.

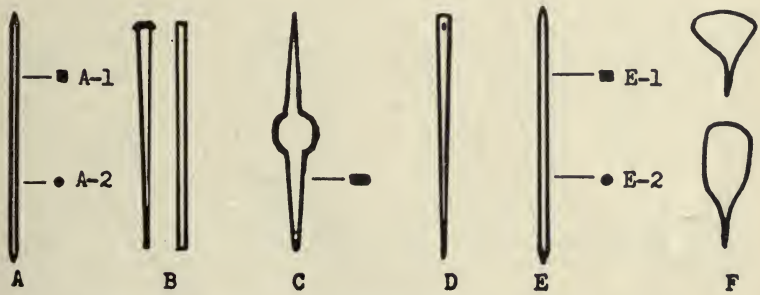
Figure 1



GROUP II. KNIVES.



GROUP III. CRESCENTS.



GROUP IV. AWLS, PUNCHES, NEEDLES, PIKES DRILLS.

Figure 2

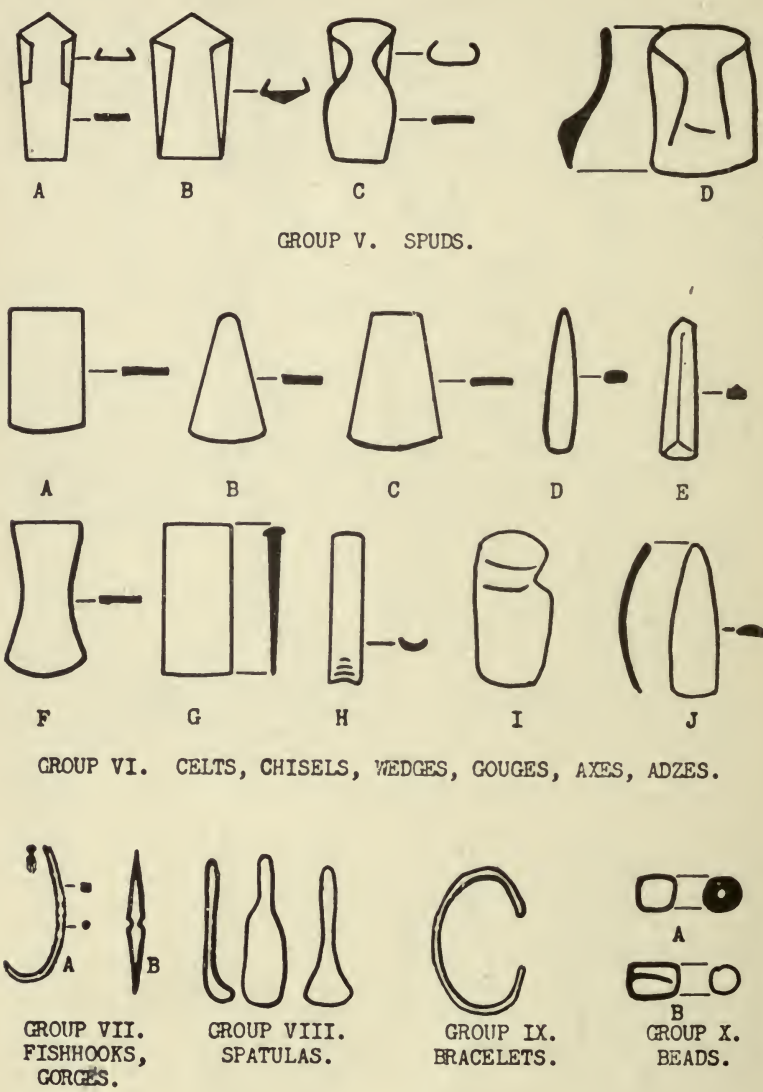

A
B
C
D
GROUP V. SPUDS.
A
B
C
D
E
F
G
H
I
J
GROUP VI. CELTS, CHISELS, WEDGES, GOUGES, AXES, ADZES.
A
B
GROUP VII. FISHHOOKS, GORGES.
GROUP VIII. SPATULAS.
GROUP IX. BRACELETS.
A
B
GROUP X. BEADS.

Figure 3

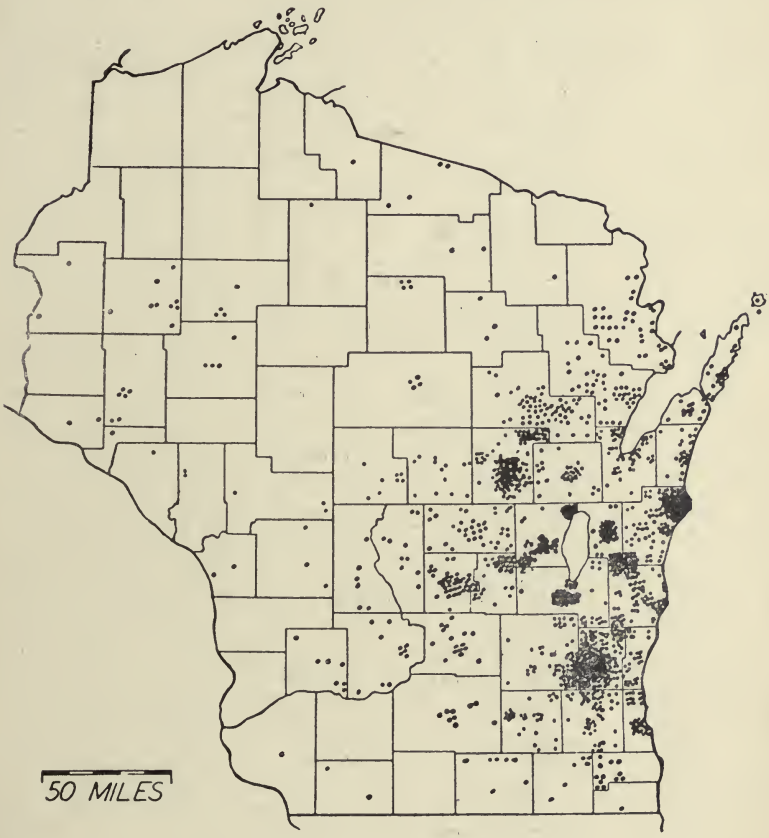


Figure 4. Total distribution in Wisconsin of the Old Copper artifacts in the collection of the Museum of the State Historical Society, Madison; The Neville Public Museum, Green Bay; and the Public Museum of the City of Milwaukee.

TABLE I – TABULATION OF CACHE ASSOCIATIONS

Cache	TYPE																
	I-AI	I-D	I-I	I-J	I-L	I-O	II-AI	III-A	IV-AI	IV-C	IV-E	V-C	V-D	VI-G	IX	X	XI
1. Osceola	2				1		1		21				6		?	x	1
2. Mohr						2	1		2	4							
3. Blair I			2			1		2		1							
4. Blair II				1				3									
6. Doty [1]			2					1				1		1			
5. Okrou								1						1			
7. Wegend					5				1								
8. Fond du Lac [2]		16							1		3						

[1] Two unique specimens that were included are a "sword" and a "banner" or "double bitted axe."

[2] Unique specimen included was a cylinder, solid at one end and with a perforation in the wall at the other end.

Note: All specimens (except those from the Osceola site) are in the State Historical Museum at Madison, Wisconsin.

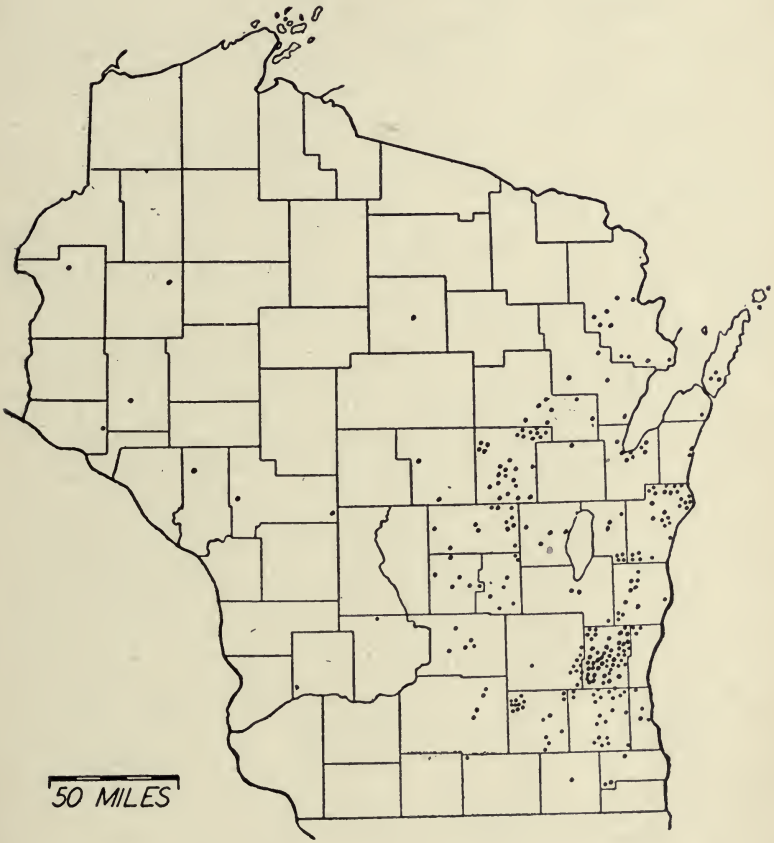


Figure 5. Distribution of Type I-AI in Wisconsin

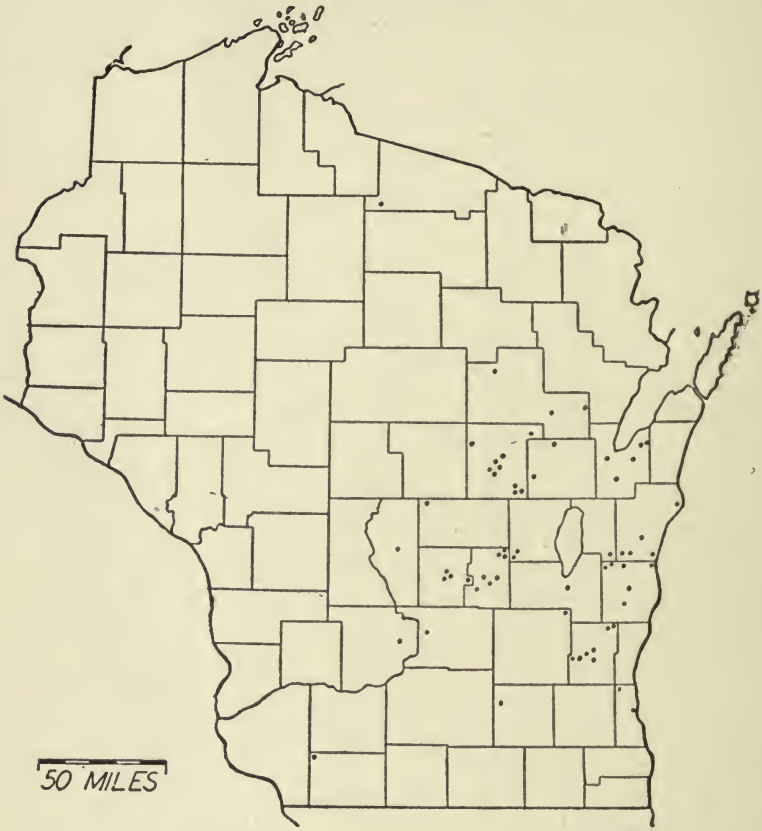


Figure 6. Distribution of Type I-A2 in Wisconsin

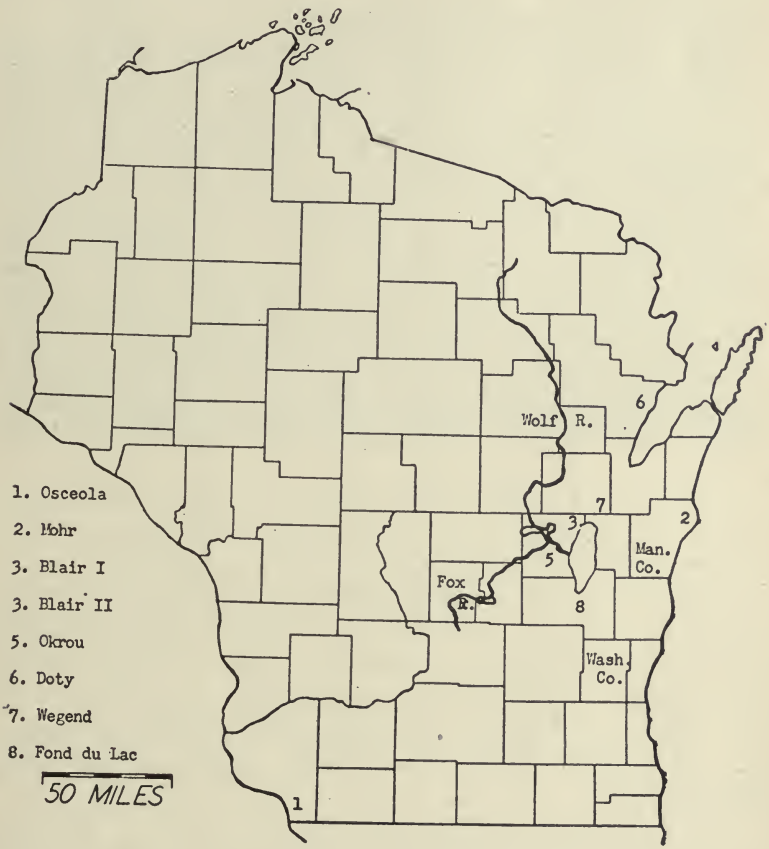


Figure 7. Locations of the Osceola Site, Wisconsin Cache Finds, and Places Noted in the Text.

THE OCONTO SITE – AN OLD COPPER MANIFESTATION

By Robert E. Ritzenthaler and Warren L. Wittry

Introduction

The purpose of this preliminary paper is to present a descriptive report of a recently discovered Old Copper site on the western outskirts of the city of Oconto in Oconto County, Wisconsin. The importance of the site lies in the fact that it is only the second instance of Old Copper artifacts found in situ with burials, the first being the Osceola Site in Grant County, Wisconsin, discovered and excavated in 1945. While Osceola added some important information to this little-known culture in Wisconsin, it was obvious that more sites were necessary for comparative purposes and to expand the picture of the life of these early Wisconsin inhabitants. The Oconto Site provided valuable data along these lines.

It has been generally believed that the Old Copper people were the earliest Indians to inhabit Wisconsin, and estimates run as much as 5000 years ago for their arrival. Their name is derived from the fact of their having made considerable variety of tools and ornaments out of Lake Superior copper by the process of cold hammering or heating and hammering. The copper artifacts, most of which have occurred as surface finds, are distinctive for their thick coating of copper salts and heavy acid erosion which suggest considerable antiquity.

The Osceola Site (Ritzenthaler, 1945) showed that along with such Old Copper artifacts as socketed-tang spear points, spuds, knives, awls, conical points, beads, and bracelets there occurred a rather distinctive chipped-stone industry. The chipped-stone work exhibited fine workmanship in primary flaking and secondary retouching, and included in its products a characteristic type of drill, scraper, and point. The points were consistent in having a lanceolate shape with rather parallel sides, side notching, and a concave or sometimes straight base. Two bannerstones, of the "bow-tie" and prismoidal type, found by amateurs at the site provide evidence that they also made ground-stone artifacts. Their burial

Fig. 1. General View of Site

complex consisted of interment in a cemetery (no mounds) and the employment of the bundle burial method as most common, but partial cremation was also practiced. Their type of implements indicate an economy based on hunting and fishing.

With this rather meager picture of Old Copper culture the Oconto Site was approached. One chief objective was to obtain enough charred wood for a Carbon 14 analysis as to accurately date this group. We were also interested in getting information on house type, ground-stone work, and in obtaining data which could be compared with Osceola in terms of burial practices, and types of copper and chipped-stone artifacts.

The Oconto Site

The Oconto Site was discovered in June, 1952, by Donald Baldwin, a 13 year old boy, while digging in an abandoned gravel quarry on the western outskirts of the city of Oconto. His discovery of human bones was investigated by Mr. Reuben LaFave and Mr. George Hall of the Oconto County Historical Society, and their test excavations revealed burials accompanied by copper artifacts. The find was reported to the

Milwaukee Public Museum, and two members of the anthropology department made a one day trip to examine the site and artifacts obtained thus far. Arrangements were made to excavate the site, and on July 16th, Mr. Warren Wittry representing the Wisconsin State Historical Society, and Mr. Robert Ritzenthaler and Mr. Arthur Niehoff of the Milwaukee Public Museum arrived at Oconto and began work. The project was conducted as part of the program of the Wisconsin Archaeological Survey.

The site (Fig. 1) lies within the western limits of the city of Oconto with the burial area about 150 yards north of the Oconto River. Specifically it is within Part 4 of Government Lot 8, Section 24 of Oconto Township, and is now the property of the Oconto County Histrical Society. The area was formerly a fairly level one, but commercial gravel operations during the 1920's removed and disturbed a large area and there is little doubt that a considerable portion of the burial site was destroyed in the process. It is probable that the

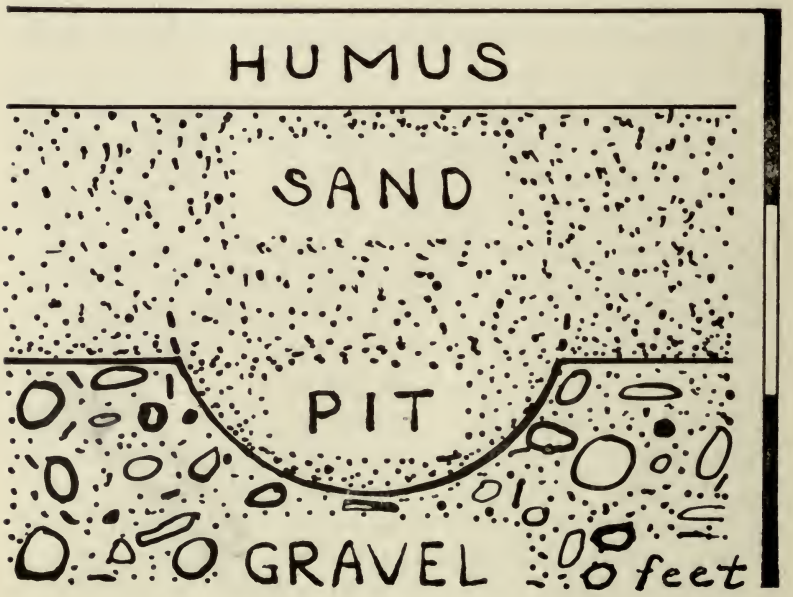


Fig. 2 Profile Diagram

burial site originally enclosed an area at least 100 feet square. There is no indication of mounds. Beneath the eight-inch top-soil lie several feet of Plainfield fine sand, underlain by gravel.

Method of Excavation

A base line running north-south was established and a five-foot grid system employed. Excavation procedure was to strip a square rapidly down to the bottom of the approximately eight inch humus layer which was sterile except for quantities of sawn animal bones existing as refuse from a slaughterhouse formerly located just to the east of the burial area. When the yellowish sand lying below the humus line was reached, stripping proceeded more cautiously as occasional copper implements (particularly awls) were found only a few inches below the top of the sand layer. Near the bottom

Fig. 3. Feature 10 showing pit shape and extended burial

Fig. 4. Feature 7 showing partial flexed burial with skull of bundle burial near pelvis, and skull of child and two antler tips near feet.

of the roughly two foot deep sand layer, the burial pits would begin to show up (Fig. 2). The burial pits were rectangular as seen from above, roughly two by four and one-half feet in size, and basin-shape in cross-section. They had been dug into the gravel, the burials laid-in and covered with sand, so the pits were discernible by the gravel outline when approached from above. The cremation pits appeared as roughly circular when seen from above, basin-shaped in cross-section, and in instances did not penetrate into the gravel layer. Each pit was given a feature number.

The Burial Complex

Nearly all the burials occurred in pits, and both burial pits and cremation pits were found. Eighteen burial pits were discovered, with one of these sterile. Three others had been uncovered by Mr. LaFave before our arrival. While the usual size was about two by four and one-half feet, they ranged in length from four to eight feet, and in width from two to

Fig. 5. Feature 5. Double burial in pit showing bone whistle at back of head of child.

Fig. 6. Feature 15. Tightly flexed burial.

nearly four feet. The shape was rectanguloid as seen from above, with rounded corners, sometimes to the extent of resulting in the outline being more elliptical than rectanguloid. They were basin-shaped in vertical cross-section (Fig. 3) and from one to two feet in depth. Most were "custom dug," just large enough to house the individual or individuals interred. Of the twenty-one burial pits, one contained nothing eleven contained a single individual, seven contained two individuals, one contained three, and one contained five. A variety of burial positions were sometimes found to occur in a single pit. In Feature 7, for example, there were three bundle burials, one partially flexed, and one extended (Fig. 4). In the two instances in which secondary burials occurred in the same pit with primary ones, the secondary burials were

Fig. 7

above the primaries. Apparently the individuals who died in the winter were kept until the spring thaw made digging possible. Then the recently dead were interred in the flesh and the bones of those left over from the winter were thrown on top as secondary burials. In eight of the pits one or more artifacts were found, but there was no consistent or significant position of artifacts in relation to the skeleton. The bone whistle, however, lay at the back of the head of the child (Fig. 5). (See Webb, 1950, p. 291, for a similar occurence.) Thirteen of the pits were orientated with the longitudinal axis running in a roughly north-south direction, but there seems to be no significance to it, as some had an east-west orientation, and others fell somewhere in between. Furthermore, there seemed to be no pattern as to how the individuals were faced.

A total of seven cremation pits were discovered plus one reported by the LaFave excavation. They were roughly circular as seen from above, and basin-shaped in vertical cross-section. Their diameter ranged from two to four feet, their depth was about a foot, and they contained thick concentra-

Fig. 8

tions of small fragments of partially cremated human bone. In some instances it was evident, and in others probable, that they contained the remains of more than one individual. Two of the pits contained a single copper artifact each.

Based on the one fact that at least 45 individuals were excavated in the area worked, and that the major portion of the site was destroyed by gravel operations, it was estimated that the cemetery must have contained at one time approximately 200 individuals.

In summary it may be noted that while at Osceola, only two methods of burial were encounted (i. e. bundle and partial cremation), the Oconto group employed five methods as follows:

Method	**Number of Individuals** certain	probable
Extended	9	(2 of these were prone positions
Partially flexed	4	3
Fully flexed (Fig. 5)	3	1
Bundle	12	
Partial cremation	8	Pits (number of individuals unknown)
(Unidentified)	5	
	45 individuals	

Fig. 9

Physical type:

A study of the skeletal material has yet to be made, but it is readily apparent that they were a fairly robust group, of average stature for Wisconsin Indians, but with well-developed musculature. The state of bone preservation ranged from fair to very poor.

Evidence of Occupation

Besides the cemetery there was little in the way of evidence of occupation. Copper implements, particularly awls, occurred sporadically in the upper levels of the sand layer and bore no apparent relationship to the burials. Four chipped-stone points were found apart from an association with burials. It is probable that they represent lost or discarded items. Numerous post molds were found and mapped, but no discernable pattern was apparent. A considerable number were of consistent size, usually .8 feet in diameter, and in some cases three or four would line up with fairly consistent spacing and direction, then abruptly end. Fragments of charcoal were found in two of the molds. The end product was a map show-

Fig. 10

ing such disorderly scattering that no resemblance of a wall or house could be ascertained.

Artifacts

A detailed list of the Oconto specimens with description, measurements, and association appears as Appendix A of this report. This section will concern itself with a summary of the types found and comparisons with Osceola materials.

Copper:

Oconto yielded fewer copper artifacts and fewer types than Osceola. There was a total of 26 specimens found, including those dug by local residents and turned in for measurement and photographing. The types are listed as follows:

Seven awls (Fig. 7), four crescents (Fig. 8), three clasps (Fig. 9), and one each of the following: socketed-tang spear-point, fish-tail-tang spear-point, ovoid spear-point with broken tang (Fig. 19), fishhook, bracelet (Fig. 11), section of spirally-coiled tubing (sig Fig. 9), rivet, and spatula (Fig. 12).

Fig. 11

There were also four small unidentified pieces.

As with Osceola, awls were the most numerous type of artifact, but the Oconto specimens were of smaller size. Crescents were more numerous at Oconto, but in contrast with Osceola no spuds were found and only one socketed-tang spear-point. At both sites utilitarian products were much more numerous than the ornamental.

Chipped Stone

Somewhat surprising, in contrast to Osceola, was the paucity of chipped-stone implements. A total of seven such artifacts were found, with only three being associated with burials. Of the remaining four, one, a straight-stemmed point fragment, occurred in the humus layer and could represent a different culture, one was found in a disturbed area and stratigraphy could not be determined, and two were near the top of the sand layer. All were projectile points with the exception of one, a triangular scraper found with a burial (Fig.

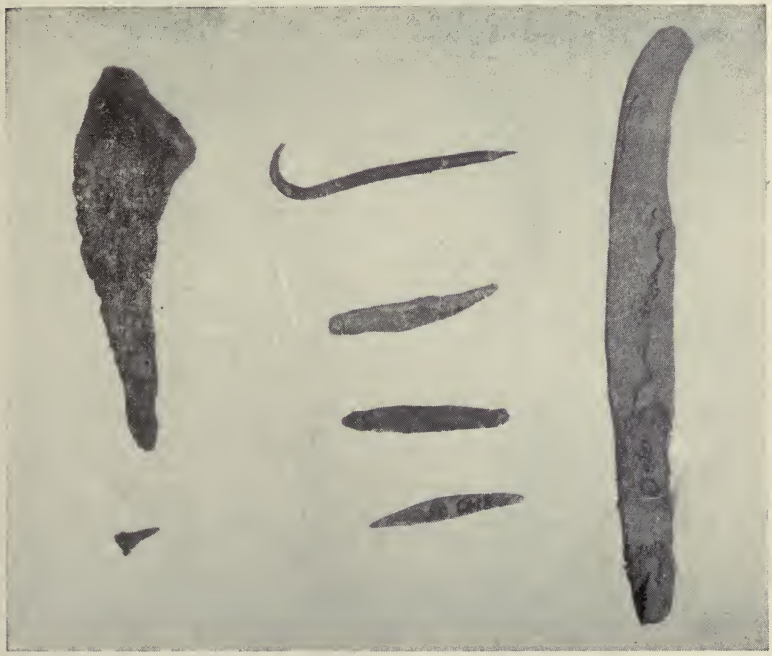


Fig. 12. Spatula (at right), fishhook, rivet (left bottom), and four unidentified pieces.

13). Of the two points found with burials one was triangular in basic shape with the side notches, but the sides of the blade appear to be re-chipped; the other was ovoid with a straight base and side notches. The latter was the nearest in type to the Osceola type, but none were characteristic Osceola points. Besides the variation in type, the Oconto points were smaller, none being over two inches in length. Like Osceola, however, the technique of primary flaking with secondary retouching along the edges was employed.

Bone:

Two bone artifacts were found, the first bone implements to be associated with the Old Copper complex thus far. The

Fig. 13

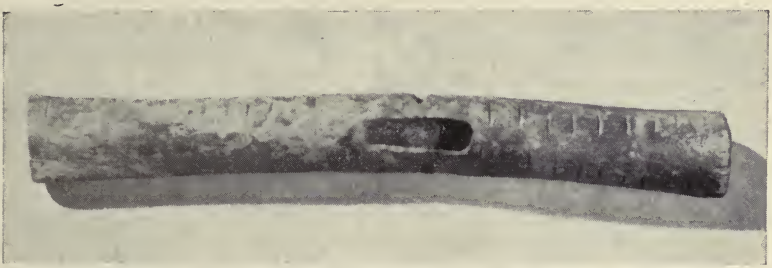


Fig. 14

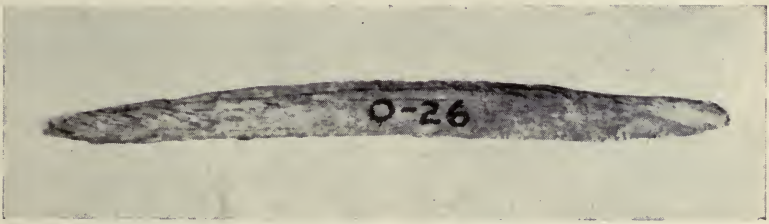


Fig. 15

most interesting was a fine specimen of a whistle (Fig. 14) made from a deer tibia.* It was six inches long with a rectangular opening near the center, and three rows of short, incised lines running the full length as decoration. The second specimen was an awl (Fig. 15) 2⅝ inches in length and made from a portion of a fish jaw.

Antler:

Two well-preserved antler tips, suitable for use as flaking tools although the polished ends gave no indication of such use, were found together in a burial pit (Fig. 16). A third specimen, a charred short end-section occurred in a concentration of charred wood.

Shell:

A series of 14 pond snail (Campeloma decisum) beads (Fig. 15) plus fragments of several more were found with a burial before our arrival. They were reported as occurring at the wrist of the skelton and apparently ⅛ inches in diameter

* It has been more recently determined that this was actually swan humerus.

near the center with the stringing presumably done through this hole and the natural aperture.

Portions of two unworked shells were also found in a burial pit. One was a fresh-water clam (Unio ellipsis), the nearest present source of which is the Mississippi River. The second was part of the shoulder of a large lightning shell, a type of whelk (Fulgar perversus) the present distribution of which is the Atlantic Coast from North Carolina to Florida. It was from a shell originally about a foot in length, and its importance lies in its indication of trade or contact with a region over a thousand miles away.

Hematite:

Two lumps of iron ore were found near the head of the extended child burial, with which the bone whistle was found. A rounded facet, apparently of natural origin, appears on the smaller of the two.

Pottery:

No pottery was found.

Fig. 16

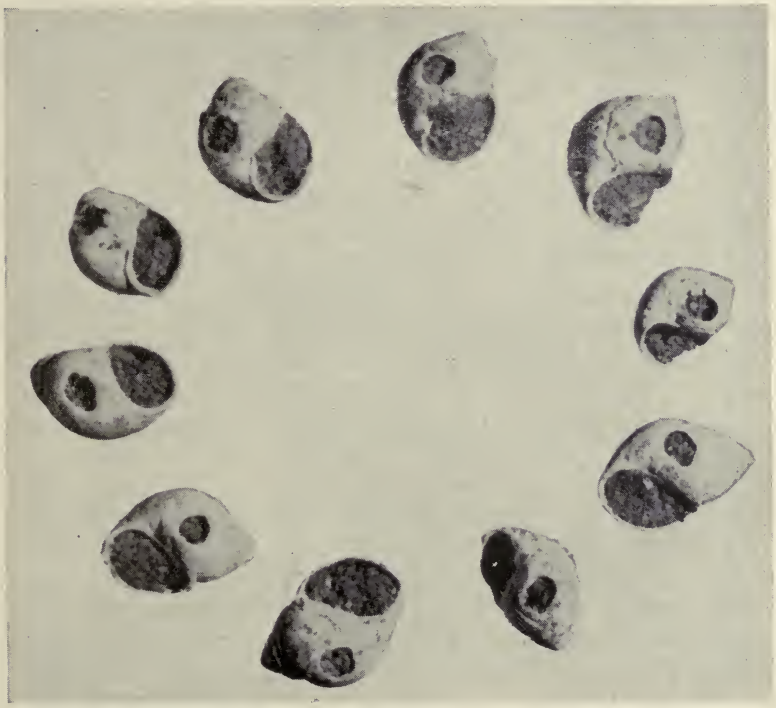


Fig. 17

Animal Remains:

Near the head of an extended burial in a pit, Feature 4, were found a number of small bones. There were identified as parts of a turtle and a duck (unidentified as to species but about the size of a mallard).

Conclusions

While the Oconto and Osceola sites are obviously closely related in culture and must be considered as belonging to the Old Copper Culture, it is also apparent that there are a number of differences between the two. The variation is most strongly evident in the chipped-stone artifacts, burial methods, bone and antler work, and polished stone. To a considerable extent it is merely the absence of a trait, such as bone work for Osceola, that creates the difference, and it is very possible that what we have here are inadequate inventories of the cul-

ture at both places. Future excavation might fill in these gaps to the extent that such negative variations will cancel out.

The variations apparent at this point could be theoretically accounted for on either spacial or temporal grounds, or both. Considering the special approach the two sites are at opposite ends of the state some 210 miles apart as the crow flies. If contact were lacking, the variation could easily occur within a relatively short period of time. As to a temporal difference, there is no evidence to indicate either that one is older than the other, or that they were contemporaneous. It might be noted that Oconto is near the heart of the Old Copper center as indicated by distributional studies based on surface finds (Wittry, 1951, pp. 14, 18) while Osceola exists as a lonely outpost, but it is impossible at this point to determine which group was the earlier.

Concerning the problem of dating, there was nothing at either site to dispute the theory that Old Copper represents an archaic horizon in Wisconsin, and that these were the earliest Indians to occupy the site. The Oconto site, in fact, bolsters this theory because of such evidence as the absence of pottery and the bone whistle of a type found in archaic sites outside the state (see Ritchie, 1944, p. 294, and Webb, 1946, p. 305). As for more precise dating, enough charred wood was obtained at Oconto for a carbon 14 analysis and it is hoped that the forthcoming analysis will provide the answer to the problem of the age of the Old Copper culture in Wisconsin.

BIBLIOGRAPHY

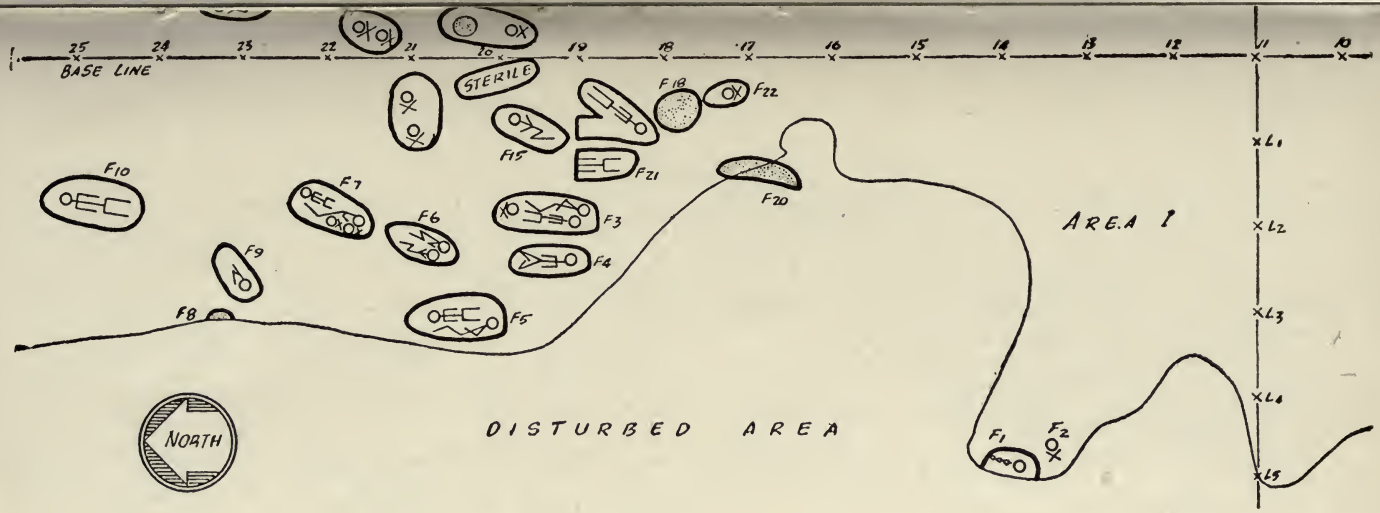
Ritchie, William A., The Pre-Iroquoian Occupations of New York State. Rochester Museum Memoir No. 1, 1944.

Ritzenthaler, Robert E., The Osceola Site. Wisconsin Archeologist. N. S. Vol. 27, No. 3, Sept. 1946.

Webb, Wm. S., Indian Knoll. University of Kentucky Reports in Anthrop. and Arch., Vol. 4, No. 3, Part 1, 1946.

————, The Carlson Annis Mound. University of Kentucky Reports in Anthrop. and Arch., Vol. 7, No. 4, 1950.

Wittry, Warren L., A Preliminary Study of the Old Copper Complex. Wisconsin Archeologist N. S. Vol. 32, No. 1, Mar. 1951.



KEY TO SYMBOLS

BURIAL PITS

CREMATION PITS

BUNDLE BURIAL

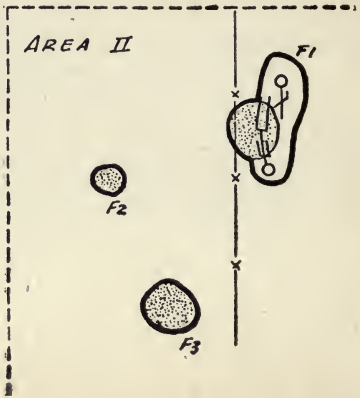
FLEXED BURIAL

EXTENDED BURIAL

FEATURE F

STAKE ×

SCALE 0 5' 10'



BURIAL MAP

APPENDIX A

Field Catalogue — Oconto Site

Cat. No.	Description	(In inches) Lgt.	Width	Thickness	Association
O- 1	Copper Crescent. Knife or chopper type.	4-5|16	3-3|8	2|16	Found by Olson, in pit with articulated burials in about Sq. 18 L 3.
O- 2	Copper Crescent. Ornament type.	3-	1-1|2	1|16	"
O- 3	Copper Spear-point. Fish-tail base, ridged blade Point length 1¾, tang 1⅞.	3-5|8	-10|16	1|16	"
O- 4	Copper Bracelet. Open ends coming to points. Diameter	3-7|8	-11|16	1|8	Found by LaFave in pit with burials in Sq. 18 L 3.
O- 5	Copper Point. Broken tang	3-7|8	1-1|4	1|8	In disturbed soil, Area 2, Sq. 11 L 15. Probably associated with Cremation pit. (see Burial 2. F. 1) No association.
O- 6	Copper Spatula. One end pointed and bent back over main axis. Piece of fiber at this end. Opposite end thinned and rounded.	3-7|8	- 7|16	3|32	Near knee of extended burial, Burial 1, F. 1, Area 2, Sq. 11 L 15, and proably associated with it.
O- 7	Copper Artifact. Spatula or part of crescent?	2-1|2	- 3|4	1|16	In cremation pit, Burial 2, F. 1, Area 2, Sq. 11 L 15.
O- 8	Copper Crescent. With 3 fragments that seem to be layers from it. Found with two fragments of birchbark preserved by contact. Section of fiber also preserved by contact.	2-1|2	- 9|16	1|8	On vertebrae of child in pit, F. 1, Sqs. 14 L 4 & 5.

Cat. No.	Description	(In inches) Lgt.	Width	Thickness	Association
O- 9	Copper Fishhook	1-9|16	-	1|16	In pit with burial. F. 6. Sq. 20 & 21 L 2.
O-10	Copper Artifact (Part of Awl?) Rectangular in cross-section.	1-1|16	-3|16	1|16	Sq. 23, 3" below humus. No association.
O-11	Copper Artifact (Part of Awl?) Rectangular in cross-section.	1-1|8	-3|16	1|32	Sq. 21 R 1, .4' below humus. No association.
O-12	Copper Awl. Square in cross-section.	2-1|16	-3|32		Sq. 22 L 2, 7" below humus. No association.
O-13	Copper Awl. Rectangular in cross-section.	3-1|4	1|8x5|32		Sq. 19 L 3 in disturbed area, near No association.
O-14	Copper Awl. Bent in two places. Square in cross-section.	2-1|8	-1|16		Near top of cremation pit. F. 8. .2' below top of pit. Sq. 23 L 2.
O-15	Copper Awl. Rectangular in cross-section.	3-15|16	-1|4	1|8	In Sq. 19 R 2, .9' below humus. No association.
O-16	Copper Awl. Square in cross-section.	2-15|16	-1|8		In Sq. 24 L 1, 2" below humus. No association.
O-17	Copper Awl. Rectangular in cross-section. Expanded near top.	4-5|16	-1|4	1|8	Sq. 26, .7' below humus. No association.
O-18	Copper Artifact. Double-pointed.	1-	-1|8	1|16	Sq. 20 L 2, 6" below humus. No association.
O-19	Chipped-stone point. Straight base and sides. Side notched. Secondary retouching.	1-3|8	1-		With bone awl near head of infant at edge of pit in F. 7. See O-26.

Cat. No.	Description	(In inches) Lgt.	Width	Thickness	Association
O-20	Chipped-stone Point. Straight base, curved sides. Side notched. Secondary retouching.	1-15|16	1-1|8		5" from knee of partially flexed burial (B) in F. 3, Sqs. 19 L 1 & 2.
O-21	Chipped-stone point. Straight base, straight sides Side notched (broken at one notch)	1-1|8	-3-4		In Sq. 17, in humus, 1" from surface. No association.
O-22	Chipped-stone Point. Base broken, curved sides, side notching.	1-7|8	1-5|16		In disturbed soil, Sq. 18 L 1. No association.
O-23	Chipped-stone Point. Fragment of upper portion. Tang base ⅞" long.	1-7|8			In humus, area 2, Sq. 9 L 16. No association.
O-24	Chipped-stone Scraper.	1-3|8	1-		In Sq. 23 R 1, F. 17 in association with partially flexed (?) burial. Next to an arm bone—probably the radius.
O-25	Bone Whistle. Made of a deer tibia. Length 6-⅛", ¾" in diam. Rectangular opening at top 1" long by ¼" wide, 2⅛" from end. 2 holes ⅛" in diam. cut in either side 5/16" below middle of opening. 3 rows of incised lines for decoration, each line approx. ¼" in length and about ¼" apart. Row at bottom has 27 lines, one row at top has 30, other row at top has 23. Bone is highly polished.				Found at back of head of child extending down into ribs of Burial 2, F. 5, Sq. 20 L 3. See O-34.
O-26	Bone Awl. Made from a fish jaw. Oval in cross-section. Both ends pointed.	2-5|8	- 3|16	1|8	With stone point near head of infant at edge of pit F. 7.
O-27	Antler Tip. Tip polished.	4-5|8	- 3|4	dia.	Between heel of flexed female and head of infant in F. 7.
O-28	Antler Tip. Tip polished.	3-1|4	- 7|16		Next to O-27.

Cat. No.	Description	(In inches) Lgt.	Width	Thickness	Association
O-29	Antler Tip. Charred.	1-3|4	- 5|8		In F. 11 (Charcoal concentration),
O-30	Lot of Pond Snails (Campeloma decisum). 14 complete ones plus fragments of more. Centrally perforated for stringing as bracelet.	-3|4			Found by LaFave with burial. Apparently at wrist as though worn as a bracelet.
O-31	2 parts of shoulder of lightning shell, type of whelk (Fulgar perversus). Present distribution Atlantic Coast from N. Carolina to Florida. From a large shell about 1 foot long and about 6" in diameter.				Found by LaFave in pit with burials in 18 L 3.
O-32	2 parts of Clam Shell (Unio ellipsis) a fresh-water clam. Nearest source at present—Miss. River.				" " "
O-33	Chipped-stone Point.	2-	1-1|16		None. Found just below humus in Area 2.
O-34	Two Lumps of Iron Ore.				With Burial 2, F. 5, under whistle O-25.
O-35	Copper Crescent. Ornament type.	2-1|8	- 3|16	1|16	In Square 25. With burned bone fragments 2.3' below humus.
O-36	Copper Rivet. Head is ⅛" in diameter, opposite end sharply pointed.	-5|16			F. 12. In lump of fused sand.
O-37	Copper Awl. Rectangular in cross-section. Heavily encrusted with fused sand. Broken into 3 sections.	5-1|4	- 1|2	1|4	In F. 12. In lump of fused sand. (approximate only).

(For skeletal material see Milwaukee Public Museum Accession No. 17276)

APPENDIX B

Field Catalogue — Oconto Site

Jensen Collection *

A. Socketed-tang copper spear-point with rounded tip. Length 4⅛" point 1⅞" tang 2¼".
B. Piece of spirally-coiled copper tubing. Length 1⅞", outer diameter 3/16", width of coils 5/16".
C. Copper clasp. Ends pointed, end bent back. Length 7/16", width 3/16", thickness 1/32".
D. Copper Clasp. Length 5/16", width ¼", Thickness 1/32". Bent in half.
E. Copper Clasp. Ends doubled over and joined at center. Length 5/16", width 3/16", thickness 1/16".
F. Pond snail (Campeloma decisum). Perforation near center. Length ¾".

* In possession of Mr. R. Jensen, 816 Scherer Avenue, Oconto.

THE BURIAL COMPLEX OF THE REIGH SITE, WINNEBAGO COUNTY, WISCONSIN

David A. Baerreis, Hiroshi Daifuku, and James E. Lundsted

Introduction

During the past fifty years a very considerable portion of Wisconsin's archeological resources have been destroyed by agricultural operations, road construction, city expansion and many other processes attendant upon an expanding population. Since these activities show no signs of abatement, it is a very pleasant task to report the rescue of an important body of information from a key site threatened by destruction. This, the Reigh site, is located in Algoma Township, Winnebago County, on the south shore of Lake Butte des Morts (Sec. 7, T 18 N, R 16 E). It consists of a cemetery and a later village site placed upon a high gravel ridge overlooking the lake. Sites having a comparable position on Lake Winnebago and the chain of lakes (Butte des Morts, Winneconne and Poygan) connected by the Wolf River have received frequent mention in brief reports, but adequate descriptions permitting cultural identification have been rare.

A portion of the farm (formerly the O'Krueg farm but now owned by Mr. Matt C. Reigh) on which the site is located is now being operated as a source of sand and gravel. During July, fill was being removed by Mr. Bernard Miller of the

B. F. Miller Excavating Company and in the course of this work he encountered several burials. This find was reported by Mr. Miller to the Oshkosh Public Museum. James E. Lundsted, Curator of Anthropology of that institution, investigated the site and determined that its size and the need for speed in salvage work would require additional trained help. Mr. Lundsted therefore called John W. Jenkins, Chief Curator of the State Historical Museum who sent Hiroshi Daifuku of their staff to aid in the work. Preliminary explorations confirmed its importance and the scope of the site made further aid imperative. The crew working there was finally augmented by David A. Baerreis of the University of Wisconsin, a group of students from that institution (Alexander Alland, Jr., John Dallman, Richard Keslin, Robert Maher, and Robert Nero), and Warren Wittry of the State Historical Museum. The coordination of this work was achieved through the Wisconsin Archeological Survey which has, as one of its objectives, such emergency work in archeology. The expenses of the field work were supported by grants from the Graduate School of the University of Wisconsin, the State Historical Society of Wisconsin, and the Wisconsin Archeological Survey. Several of these institutions, including the Oshkosh Public Museum, contributed the services of their staff members.

Special mention must be made of the assistance given to us locally. Mr. B. F. Miller not only reported the presence of the site but scheduled further sand and gravel excavations so that they would not interfere with archeological salvage. We are deeply appreciative of the permission to work in the area given by Mr. Matt Reigh, and also for the pleasant hospitality of Mr. Reigh and his son-in-law, Mr. George Patzlaff. Mr. Patzlaff was of considerable assistance in providing fencing for the site since most of the work was accomplished on week ends to avoid interference with summer school at the University. He also aided in removing fill and overburden from the burial area with his tractor.

The map of the burial area included in this report was prepared by John Dallman from our field version. We are indebted to Dr. Austin L. Rand, Curator of Birds of the

Chicago Natural History Museum for the identification of bird bones found at the site.

In this report our objective is to describe the burial complex and associated artifacts. In the plow zone overlying the burials a few sherds were recovered though none appeared in the actual fill of the graves themselves. Marginal to the cemetery area a series of large basin-shaped pits contained additional ceramic material. The ceramic material appeared to be later than the burials since no sherds were found within the grave fill. Since they seem to represent a distinct and more recent occupation of the site, these materials will be presented separately in a paper being prepared by Warren L. Wittry. A desire to avoid excessive length in the paper as well as to expedite publication of the burial complex precludes the inclusion of the pottery report at this time.

Burial Complex

Excavations at the Reigh Site disclosed that the burials were primarily concentrated in an area 32 by 36 feet in maximum dimensions with a few additional ones placed 40 feet northwest of the main sector (see Map 1). A total of 43 individuals were removed, a figure which does not include the burials disturbed prior to our work. In part, the numbering of the burials was determined by convenience in the field situation for not all individuals included under a single number were necessarily interred at the same time. Since this factor is crucial in determining the sequence of events at the cemetery, each of the burial groups will be described with stress placed upon the information that will aid us in establishing whether we are dealing with a single burial complex or the burials of several cultural groups. Many of the burials at the northern margin of the area have suffered some disturbance, either due to the action of a power shovel used to remove sand and gravel for commercial purposes or to subsequent probing or excavation prior to our work. Burials at shallow depths also appear to have been disturbed by deep plowing.

For each burial the approximate depth below the surface is given. This measurement is an approximation since the topsoil had been previously stripped from most of the region

by the power shovel. The technique used was to carry a horizontal level from the closest undisturbed point to the region of the burial and then to take a vertical measurement at that point. Since the undisturbed regions were at the south and southwestern margin while the land sloped slightly to the north, this procedure might tend to slightly exaggerate the depth rather than give a picture of unduly shallow burials.

Below the topsoil in this region, which was entirely in the plow zone, was a zone of reddish stained sand, generally consolidated markedly. Below this was an unconsolidated sand of light color. Burials occurred in both sand zones, usually with no clear pit outlines.

The burials are described roughly in their order of appearance from east to west in the area excavated.

Burial 25. Subsequent to the discovery of the original burials, commercial gravel and sand removal was confined to the area west of the presumed burial zone. The lower limbs of one burial, however, were struck in this area and additional bones were discovered in the bank face. Although given a single number, actually two distinct burials were represented.

As the excavation proceeded into the undisturbed area, it became evident that we had the remains of an extended burial aligned in a northeast-southwesterly direction with the head originally at the southwest end. The bones of the feet and the two tibiae and fibulae had been removed along with the sand and gravel. The two femora were still in place, however, articulating with a horizontally placed pelvis indicating that the individual had rested upon his back. The right arm was also found in an extended position along the side of the body. The remainder of this burial, at first glance, appeared difficult to interpret. A skull, badly cracked and lacking the mandible, was resting in an upright position over the abdominal region. Below the skull were a series of vertebrae and a few ribs in normal anatomical position but the bone of the left arm and upper portion of the body were missing.

The reason for this seemingly peculiar combination of primary and secondary burial practices became clear as the excavation proceeded in a southwesterly direction. The lower legs of a second individual occupied the position where the

left arm and upper portion of the body of the first burial should have been. We may designate the burial of the first individual as 25A and that of the second as 25B to clarify our description. Further excavation disclosed that Burial 25B consisted of a fully extended burial on the back with the arms extended at the side. The head was at the southwestern end of the grave and rested upon the right side. It seemed clear that the reason for the disturbed condition of the grave of Burial 25A was that this older burial pit had been dug into at the time Burial 25B was inserted into the cemetery. When the older grave was encountered, the skull of Burial 25A was pushed to one side in the corner of the new grave pit. Further confirmation of this is seen in the fact that the mandible which belongs with the skull of Burial 25A was found in the fill of the grave of Burial 25B resting five inches above the bones of this individual near the left humerus. Both burials had a similar orientation and the graves were dug to the same approximate depth, 1' 10" below the surface.

The only grave goods found with this burial was a chipped stone knife which rested with the base immediately at the tip of the right hand of Burial 25B. If the knife had been mounted in a wooden handle, which would have decayed, the handle of the knife might have been grasped in the hand at the time the person was buried. The knife, manufactured by percussion and pressure flaking techniques from a mottled grey and white chert, is illustrated in Figure 1, A, and the dimensions are given in Table 1.

Burial 6. Except where a burial has penetrated the light colored sand which underlies the topmost strata at the Reigh Site, it is difficult to determine with accuracy the outlines of a burial pit. Thus some question does exist as to whether or not all of the individuals included as Burial 6 represent a single interment.

The presence of this burial was also indicated by the exposure of bones in the face of the pit excavated by the power shovel. The profile formed by this digging indicated the presence of bones in the compact reddish sand only 4-5 inches below the surface as well as a second layer of bones 10 inches below this point. Obviously portions of the burial had been

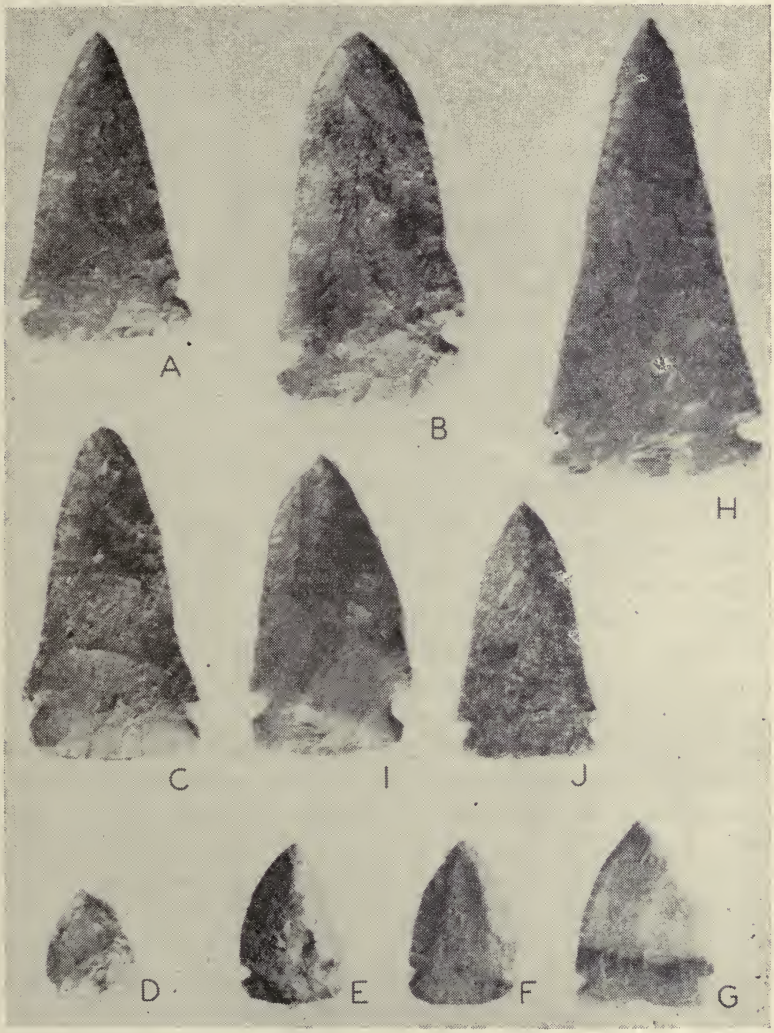


Figure 1.

Chipped Stone Knives and Projectile Points from the Burial Area. A.—Knife, Burial 25; B.—Knife, Burial 26; C.—Knife, Burial 4; D.—Projectile Point, Burial 4; E-G—Projectile Points, Burial 5; H.—Knife, Burial 11; I.—Knife, Burial 23; J.—Projectile Point, R 9.

removed but the excavation disclosed that this was probably only the edge of the burial.

Cleaning the top layer of bones was a difficult operation because of their fragmentary condition and poor state of preservation. This is largely to be accounted for by their very shallow depth and the probability that the bones had been disturbed by plowing. The presence of three skulls attested to the minimal number of individuals represented in the top layer of the inhumation. To the south of skull A and east of skulls B and C was the distal end of a radius. A small mass of long bone fragments lay to the west of skulls B and C. Skull A was that of an adult which rested upon the left side with the face to the north. Skulls B and C were somewhat thinner, perhaps representing either females or young adults and both appeared to have been face upward though this section of the skull was perhaps removed by plowing. The fragmentary condition of the remains led us to the conclusion that these were secondary burials but we cannot estimate the amount of dislocation which might have been caused by farming activities. Scattered and broken bones were found in the sand below this top layer until the second level was reached. Here it became clear that we were dealing with a complex, multiple interment. The topmost layer of bones occupied a position three feet wider (in an east-west direction) than the second layer, while the second layer extended three feet farther in a southerly direction than did the topmost layer. However, since the central point of the top layer of bones was directly over the central axis of the second layer, both layers may have been placed in the same burial pit. No pit outlines were detected that would confirm this point.

As the burials of the second layer were exposed, they appeared to be a confusing mass of the remains of at least five individuals since that number of skulls were present. The positions of the bodies became clear after the upper bones were removed and we shall give our description in the reverse of the excavation procedure to reconstruct the sequence of events that took place in the burial ritual.

At the very bottom of the mass of bones was the extended body of an adult male, an individual whose status may have

been indicated by the presence around the skull of a series of copper strips which had been originally attached to a headdress or a strip of buckskin or fabric. The strips extended around the sides and front of the skull, though not around the back (Figure 2, B). Hammered from sheets of thin (2 mm.) copper, most are 48 mm. in length and taper from a broad, rounded top (7-11 mm. in width) to a narrow (4 mm.) lower end. This lower end is folded underneath and may at this point have been attached to an encircling band. The head of this individual was at the southern margin of a roughly rectangular grave area having its long axis in north-south direction. Though the head was slightly inclined toward the right side (east), the face tended to look toward the foot of the grave (north). The legs were fully extended and parallel to each other. Between the lower limbs had been placed two sets of the bills of a crane (**Grus canadenis**), now badly decomposed. Both arms were extended at the side though the right arm was flexed outward slightly. In the crook of the right arm was placed an infant which can be recognized in Figure 2, A, only by the top of the cranium. Because of the thinness of the skull vault, it was badly crushed. The absence of the mandible and some of the other bones of the infant indicates the possibility that it may not have been a primary burial but a secondary burial in which some of the bones had been lost. Immediately below this infant and inside the right arm of the adult at the elbow region was found a conical antler point (Fig. 2, C). The point is 85 mm. in length, 17 mm. in diameter and has a pointed projection spur at the basal sector. A second and smaller (58 mm. in length) antler point in fragmentary condition was found among the ribs of the adult.

To the left and parellel to the legs of the adult had been placed the extended burial of a child. The head of the child was also to the south with the face upward. The left arm was extended along the side while the right arm had been flexed diagonally so that the forearm rested across the chest. Presumably the legs were fully extended but only the two femora were present since the lower legs had been removed by the power shovel.

The last interment of this level consisted of two adults placed at the left and right shoulders respectively of the extended adult. At the left shoulder was placed an individual whose skull lay on the left side with the head to the south and the face to the west. The body rested on the back with the arms tightly folded back upon the body. Both legs were in an extended position but folded tightly back upon the body so that the ankles which were crossed rested upon the head. The adult body which rested upon the right shoulder appears to have been a secondary burial, judging from the disarray of the bones. The skull rested in an inverted position with

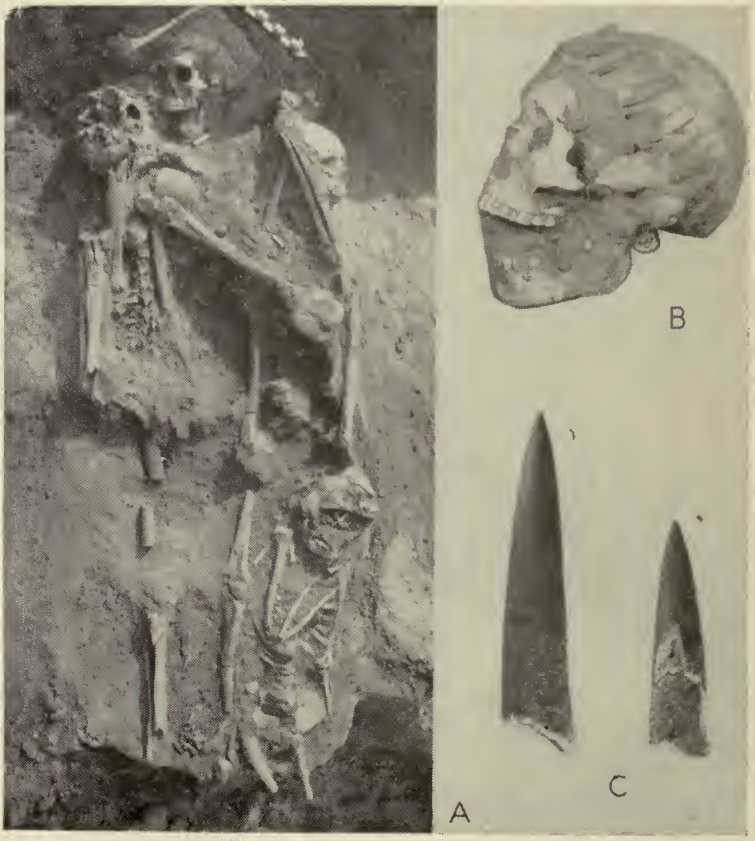


Figure 2.

A. (left) Burial 6. B. Detail of skull with copper ornaments. C. Conical bone points found with burial.

the face to the south. To the north of the skull were the two tibiae and fibulae with the pelvis at the north end. The two femora were sprawled across the chest of the primary adult with their anatomical relationships reversed. A single ulna lay above the skull of the primary adult.

Thus there were in all five individuals in the lower level, consisting of both primary and secondary burials, plus three individuals in the upper level who may have been interred after the burial pit had been partially filled. The relative position of the bodies suggested that the burial ritual revolved around the extended adult placed at the very bottom of the grave. At the time of his burial the other individuals were placed in the grave in a manner reminiscent of retainer sacrifice in late Indian sites of the Southeast. It is difficult to be certain that this is actually the case, however, and alternative explanation as to the nature of the social group or situation would be equally plausible.

Burial 17. This secondary burial was located immediately to the north and west of Burial 6. The faint outlines of a pit appeared adjacent to the bones, outlining a roughly oval area approximately 2 x 3 feet. The topmost level of the bones was 22" below the surface level, and the vertical thickness of the bone layer was 10". Within the fill of the pit were found the fragmentary remains of two skulls of young children. Mixed in the pit fill in no apparent order were portions of the facial region of one of the skulls, fragmeits of a mandible, a pelvis, and a small femur. Immediately adjacent to one of the skulls was a crumbly block of reddish sandstone. A difficult item to explain when the burial was first encountered was the occurrence of the major portion of an adult femur in contact with the skull of the second child. From its size, it was obvious that it could not have been a femur belonging to either of the children represented by the two skulls. Though only a portion of the bones of the two children were recovered, it is possible that some were removed by the disturbance we have previously mentioned.

Burial 20. After Burial 17 had been removed, the extended burial of an adult with the head to the southwest and with the lower portion of the burial extending under the area oc-

cupied by Burial 17 was discovered 33" below the surface. This individual had been buried on the back with the head on the right side. The right arm was tightly flexed with the hand doubled back to the shoulder area. The left arm had the forearm flexed at a right angle across the abdomen. So far as the legs were concerned, the left femur was in an extended position, articulated with the pelvis but only the head of the right femur was present. While the lower limbs were absent, presumably due to the action of the shovel in removing sand from this region, there seemed to be no reason why the right femur should be missing. The explanation is that when the pit for Burial 17 was dug, a portion of the earlier Burial 20 was encountered. The disturbed adult femur in the fill of this grave must have belonged to this individual. Thus, in this instance, the secondary burial is clearly later in time than the extended burial.

Burial 10. North and west of the preceding burial was a large area containing some of the most difficult burials to interpret. While these remains are grouped under a single number, it could not be determined whether this represented a single mass burial. Some indications point to the fact that disturbance of the area took place after a portion of the primary burials were placed in the region. Additional disturbance may have been due to plowing since the bones were approximately six inches below the surface. This may account for the poor state of preservation and broken condition of the bones.

The area designated Burial 10 is a roughly rectanguloid region approximately 10 by 5 feet, the long axis of the area being in a northeast-southwesterly direction. As with other burials of this region this may not be the maximum extent, since the northern edge encroached upon the distrubed area. We may describe the remains beginning with the northwestern corner since burial of an adult, placed on the back with the arms extended along the side. The skull of this individual (A) was on the right side, the head being to the southwest. A limestone block was adjacent to the occipital region of the skull. On the right shoulder of this individual rested an additional adult skull. This may not have been the position in

which the skull had been placed at the time of initial burial. Additional bones, probably belonging to the same person were scattered in the area. The mandible rested upon the chest region of individual A, for example. It seems probable, however, that at least one extended burial had been disturbed at the time the extended burial of individual A took place. Immediately to the southwest, and partially covered by the right side of individual A were two femora, articulated with a pelvis and a right ulna in the proper position for an extended burial with the head to the southwest similar to individual A. The burial of this individual, therefore, is regarded as antedating A and it is probable that most of the bones belonging to it were scattered at the time of later burial.

Southeast of the the skull of A, and separated from this burial by at least one foot, were tibiae lying parallel to each other, each having the bones of the feet in place in normal anatomical order. The remainder of this burial, again evidently an extended burial with the head to the southwest, was not in position. The body had been chopped off at the knees by disturbance in the area. Since the burial lay beyond the presumed limits of any grave pit which might have been dug for individual A, we must look for some other cause for the disturbance. A possible explanation is to be seen in the fact that 12" southwest of the proximal ends of the tibiae is an area of dark earth 10 x 18" in dimensions, containing charcoal, ash and numerous small fragments of burned human bone. The remains of a partial cremation had been deposited in the region. The burial of the cremation, which occupied a portion of the area where the remainder of the extended burial had rested, would appear to have been the cause of the disturbance. Resting upon the cremated area was the solid tip of a deer antler which had been cut off squarely at the base. This artifact had a gently rounded tip and was 65 mm. in length and had a maximum diameter of 17 mm. at the base. Possibly it had been used as a flaking tool but it may also have been an unfinished conical antler point.

At the southwestern edge of the burial area was a confused mass of human bones, the majority being badly scattered and not in articulating position. Included in these bones, how-

ever, were the remains of a child's skeleton extended on the back and again oriented with the head to the southwest. The disarticulated adult bones were scattered in part above the burial of the child.

With one further clue, we may attempt to reconstruct the chronology of events in the area designated Burial 10. The last bit of evidence is that when the burial of individual A was removed, additional burned bones were found below the vertebral column. We may therefore suggest that the area of Burial 10 was first occupied by three extended burials, two being adults and the third a child. Subsequently these were partially disturbed by the insertion of the partially cremated remains in the area. The last disturbance, and the final burial to be inserted, was the extended adult (A). This person was not only buried over part of the cremated remains but may have further disturbed the extended burial immediately adjacent to it on the southeast. If the cremated remains represent only a single individual, Burial 10 consists of the sequent burial of at least five individuals.

Burial 18. When Burial 10 was removed, an extended burial was discovered below its northwestern margin, located approximately 20" below the surface. The head was to the northeast and the skull lay on its right side. The individual rested on the back with the arms extended along the sides and the legs were fully extended though converging slightly toward the feet. The bones of the left foot crossed over those of the right foot. As the bones of the burial were being removed, a conical copper point was found beneath the head of the right femur. This would place it immediately adjacent to the right hand.

The copper point is an example of a variety which has been designated Type I-L in a typological study of Old Copper implements (Wittry, 1951: 11). It is a form which, in many features, shows marked parallels with the conical antler point. These points were formed by hammering and rolling a triangular sheet of copper. The tapering tip was beaten to form a strong, solid area but the butt end was left loosely rolled so that a haft could be inserted in the cavity. A portion of the basal section of this specimen is missing so that the pres-

ent length of 45 mm. is unduly short. The maximum width at the base is 6 mm. and the thickness 4 mm. The point is illustrated in Figure 3, A.

Burial 24. This burial number was assigned to a small group of burned bones representing a partial cremation. The bones occupied an area of about eight inches in diameter and was placed fifteen inches below the surface. Although the surrounding soil was hard and appeared baked, the concentration of the bones suggests a redisposition of the remains rather than firing **in situ.** The bone deposit is within the limits of the area assigned to Burial 10 and quite close to the cremated remains of this burial. Despite a somewhat greater depth. it is probable that the remains are a part of the cremation of Burial 10.

Burial 22. In the same area, immediately northwest of Burial 24, were the remains of a distorted and poorly preserved infant skull which was accompanied by a few ribs. Although its depth was recorded as 15" below the surface, its location is still in the red sandy-clay zone in which Burial 10 was placed. The burial, rather than consisting of a partial, secondary burial, may be a further indication of the disturbance of earlier burials brought about by the insertion of cremated remains in the area.

Burial 26. With the removal of the shallow burials in this area (Burials 10, 24, and 22) and the underlying Burial 18, a still deeper burial was discovered between 21 and 37.5 inches below the surface. Since the burial partially underlies the entire group and shows no indication of being the disturbing factor in the area, it must antedate the other burials in time.

Burial 26 consisted of two fully extended individuals, lying beside each other with the heads oriented to the southwest. The bodies had been placed in a pit 90" in length and between 31 and 34" in width. The individual on the right (A, on the northwest side) was an adult male who rested on the back with the skull oriented face upward. The arms were extended along the side with the hands lying over the lower edge of the pelvic area. The legs were also fully extended but with the left foot bent inward and crossed over the right foot.

No grave goods had been placed with the adult male. Individual B, placed to the left of the male, was an adult female. The head was turned on the left side so that it faced the elbow region of B, the whole burial being placed farther to the southeast. The arms were extended along the side, in this instance with the left hand below the rim of the pelvis. Both legs were fully extended but with the right foot bent inward and crossed over the left foot.

In the right hand of this individual was a chipped stone knife (Figure 1, B), 90 mm. in length, oriented with the tip pointed toward the head rather than toward the feet as might be expected. The knife is manufactured from a distinctive variety of banded chert in which small spherical grey and grey-black grains have been cemented in a white matrix. It is a thick, sturdy point manufactured largely by percussion flaking but with pressure flaking used to produce fine but irregular serrations along the edge. The blade has a slightly recurved outline and the stem with a rounded base was formed by diagonal notches. The thickness (13 mm.) and form would not appear to make this implement an effective penetrating weapon but it would function very efficiently as a cutting implement, particularly in view of the serrated edge. It could be effectively used, then, as a butchering tool. Adjacent to the left humerus of this same individual were two hematite pebbles. One is a rectanguloid shape (58 x 31 x 30 mm.) while the other is roughly conical (31 x 28 x 25 mm.). The rectanguloid form bears a series of concave faces that have been ground or worn in the object while the conical form also bears several grinding facets. The stones were probably used as a source of the deep orange-red pigment this material will produce when ground. A third type of artifact placed with the same individual was a conical copper point, again of Type I-L (Figure 3, B), found four inches to the south of the occipito-parietal region of the skull. It lay in the discolored sand zone of the burial pit at a depth equal to the lowest part of the woman's skull. The point is 71 mm. in width, and 11 mm. in maximum thickness. The base of the copper implement is oriented diagonally to the long axis.

Immediately to the southwest of Burial 26 was a small pit,

circular in outline (diameter 2') which penetrated through to the sand zone to a total depth of several feet. The pit fill consisted of a black earth and contained abundant charcoal. The precise functional nature of the pit and its time of origin was not determined. North of the pit were two tibiae whose relationship to any of the burials was also in doubt.

Burial 19. Proceeding further to the northwest from the burials described, was Burial 19, located about 2' from the northern margin of Burials 10 and 18 and along the edge of the disturbed area at a depth of about 24". Because of some disturbance which appeared to have resulted in the removal of the skull as well as other bones, there is some question as to the interpretation of the nature of the burial. Superficially the bones had the appearance of a tight bundle burial. However, the bones present appeared to have been in normal anatomical relation to each other and it seems probable that we are dealing with a fully flexed primary burial. If this is the case the legs and arms were tightly folded upon the body.

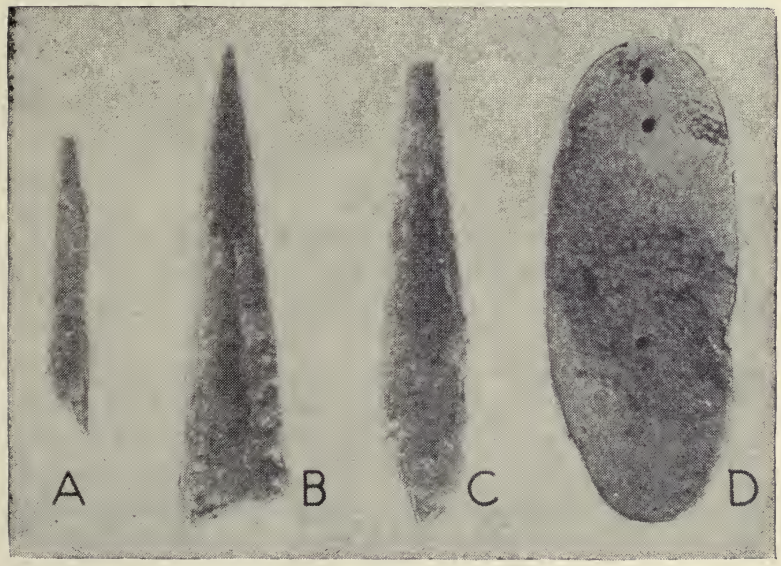


Figure 3.

Copper Points and Sandal Sole Gorget. A.—Burial 18; B.—Burial 26: C.—Burial 23; D.—Burial 13.

If, on the other hand, this is a bundle burial it is clear that sufficient tissues were present to retain the majority of the bones in anatomical relationship. No cultural materials were recovered in association with the burial.

Burial 4. This burial symbol designates an area of considerable size (91 x 36 inches), with possibly part being removed due to disturbance. In part, at least, it consists of a partial cremation. The amount of charcoal in the region may indicate a sector in which the cremation took place but the soil is not baked to the extent that would warrant making this assertion with confidence. Several unburned long bones, badly scattered, are also present in the region and appear to represent disarrayed bundle or primary burials. A marked concentration of bones, possibly a bundle, was present on the northwest margin of the area. At the eastern margin of this area, 8" from the designated burial area and 10.5" below the surface, a chipped stone knife similar in form to those found associated with burials was discovered (Figure 1, C). The knife is quite similar in form and manufacture to that found with Burial 26 and appears to have been made of the same variety of chert though it is somewhat darker in color.

At the northwestern margin of Burial area 4, approximately 2' in depth, were the remains of another burial which had been largely disturbed by gravel removal. This separate burial was designated Burial 8. Identifications as to type was impossible due to disturbance. Associated with the bones was a fragmentary projectile point manufactured by percussion flaking from a grey chert. The stem was missing making it impossible to classify. An unmodified flake of white chert was also found among the bones.

Burial 21. Directly to the southwest of the burial groups discussed above was a burial, 20" below the surface, resting on the back with the arms and legs fully extended. The skull of the burial, oriented to the southwest originally, was missing but evidently as the result of the earlier removal of commercial sand and gravel work. A small projectile point manufactured by percussion and pressure techniques from a mottled grey chert was found below the distal end of the left femur. While the point is basically triangular in outline, shallow

notches at the corners bring about an approximation of the form of the knives previously described.

Burial 15. Two feet northwest of Burial 21 was discovered a pit, 17 x 18", containing fine charcoal forming a dark fill which included both cremated bones and unburned bones. The pit would appear to have been used as an area of secondary redeposit of partially cremated remains. It was impossible to determine whether the pit fill contains simply the redeposited cremation or in addition the bones of burials disturbed in the excavation of the pit.

Burial 9. A gap of approximately two feet separates the burials previously described from another small group of burials. The easternmost, designated Burial 9, was an extended burial at a maximum depth of 18" below the surface. The most interesting feature of the burial is that it is resting in a prone (face downward) position. The skull is actually turned slightly to the right side perhaps in part due to subsequent settling of the bones since it is not fully on the right side. The left arm is extended on the side while the right arm though extended has the hand placed under the right side of the pelvis. The legs are also extended but converge slightly at the knees. The feet are not crossed as in several other extended burials reported from this site. The orientation of the head is south by southwest.

Burial 23. At a slightly greater depth, approximately 24" and with a burial pit that appeared to extend under Burial 9, was another extended burial oriented with the head to the southwest. The head rested on the right side. The left arm was extended along the side of the body and the right arm was also at the side but with the forearm slightly flexed so that the hand rests over the pelvis. The legs were fully extended but the exact position of the feet is unknown since they projected out into the disturbed area.

The burial was richly provided with grave goods. Two worked sections of the humerus of a swan (**Cygnus** sp.?) had been placed in front of the face. One was directly in contact with the face and the other rested diagonally over the first. Two hematite pebbles were resting between these two bird bones while a third was adjacent to the proximal end of the

right humerus. A chipped stone knife of banded grey chert, 73 mm. in length, lay beside the right arm with the tip of the knife pointed toward the feet (Figure 1, I). It was similar in shape and manufacturing technique to the others reported from this site. Laying upon the right arm was an elk antler axe placed with the head of the axe above the middle of the right humerus. A copper point was grasped in the left hand.

Several of these artifacts are unique in Wisconsin archeology and require further descriptive treatment. The swan bones consist of the shaft and distal portion of the humerus, cut off squarely near the proximal end. The two specimens are respectively 196 and 167 mm. in length. Each bears a series of cut notches. On the shorter specimen (Figure 4, A) these are present only on the two sides of the bone. On the longer specimen (Figure 4, B) they are present on four faces. Both specimens bear a high surface polish except where the surface is eroded. While the specimens were identified as swan, it was not possible to determine whether they were trumpeter or whistling swan. The trumpeter swan is now rare or extinct in the region but was formerly resident in the area. The conical copper point (Figure 3, C) is generally similar to those mentioned though the base, in badly eroded condition, appeared to have had a pointed extension. The presence of this basal barb would place it in Type I-N of the Wittry classification rather than Type I-L. The present dimensions give a length of 69 mm. although a small portion of the point is missing; a maximum width of 12 mm.; and a thickness of 7 mm. The axe of elk antler is perhaps among the most interesting of specimens (Figure 4, C). A major tine forms the blade of the axe, 20.5 cm. in length and 52 mm. in width. A smaller, lateral tine forms the handle with the axe having a maximum length of 37.5 cm. The "cutting edge" in this specimen is cut off rather squarely and the absence of the spongy tissue suggests it would form a convenient socket for a stone blade. No trace of such an inset blade was present, however, and it is possible that the lack of spongy tissue is due to decay rather than to intentional clearance of this area. A perforation, 11 mm. in diameter, is placed 10 mm. from the

end of the handle. Traces of an additional perforation at the handle base suggests that this end may once have been broken and reshaped. A series of deep notches are placed at the back of the axe below the level of the blade. The hematite pebbles were probably used as a pigment source and

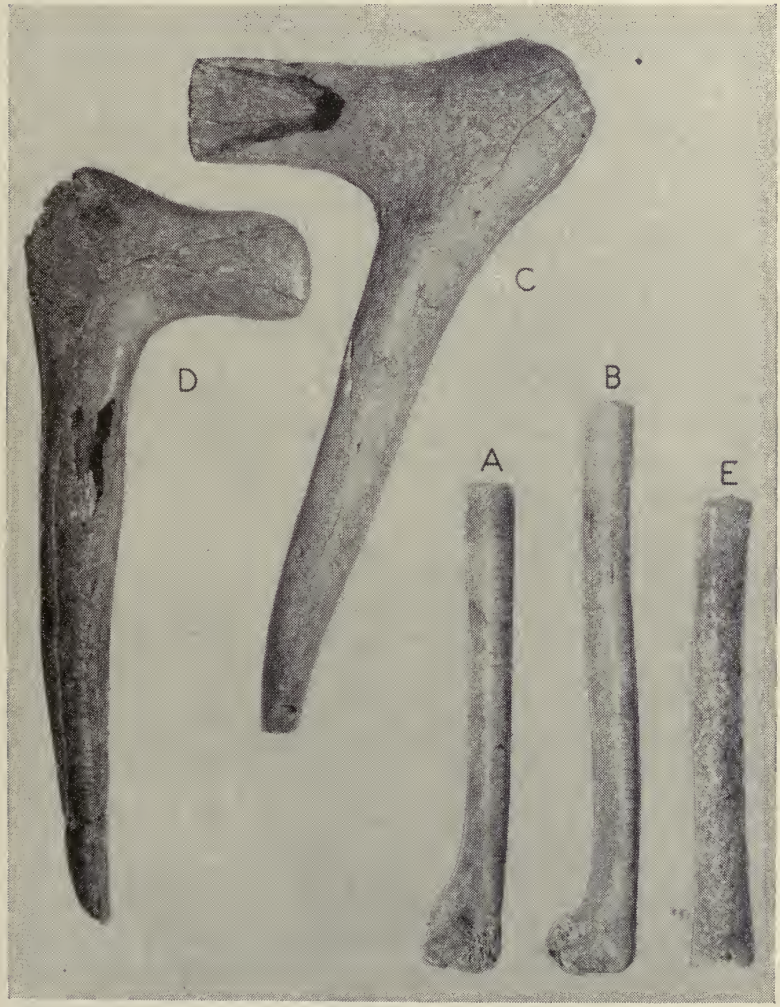


Figure 4

Bone Artifacts from Burial Area. A-B.—Notched swan bones from Burial 23; C.—Elk Antler Axe from Burial 23; D.—Elk Antler Axe from Burial 5; E.—Notched swan bone from Burial 11.

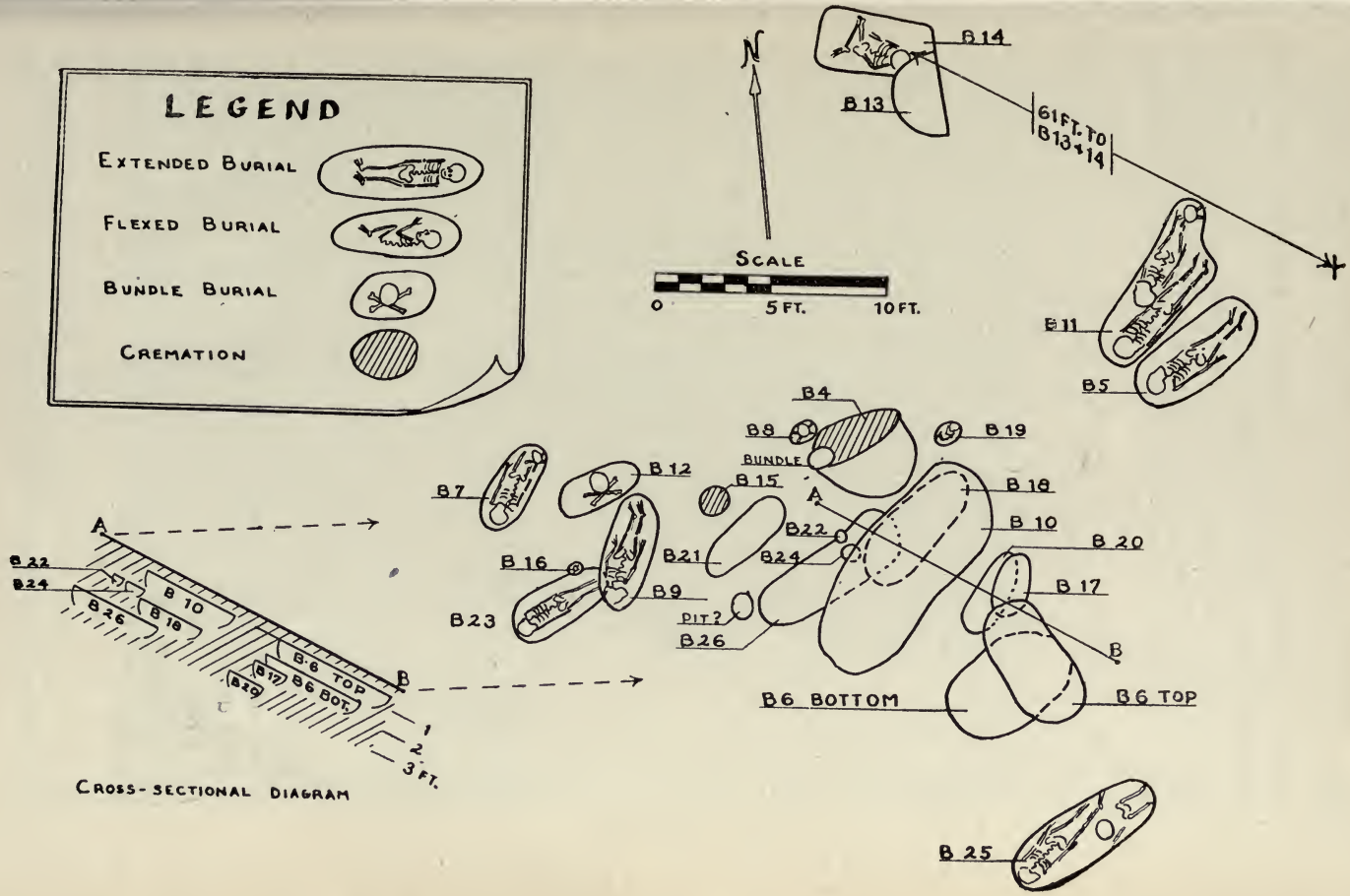
could have been obtained from the glacial gravels in this area.

Burial 16. Near the left leg of Burial 23, but evidently representing a separate burial, were found a skull and fragmentary humerus. The skull rested upon its right side, facing the northeast. In view of the fragmentary nature of the remains, it would appear to be a secondary burial though the skull is in about the proper location to be a part of the same individual represented by the lower limbs found at the south end of Burial 12. However, none of the intervening bones were found. The remains were approximately 34" below the surface.

Burial 12. Two groups of bones are placed under this burial number because of their close proximity, but it seems probable that they represent separate burials made at different times. The first group, located at the northwest sector of the area, consisted of two pair of tibae and fibulae (right and left) and associated patellae and foot bones. All of the bones were in a position which indicated they were articulated at the time of burial. A fragment of mandible was near the right patella. The leg bones lay on the right side and their length ran roughly northeast to southwest.

The second group of bones, separated by about 10" from the first group in a northeasterly direction, consisted of ribs, arm bones, pelvic fragments, a scapula, a mandible and other fragments. As these bones were removed, fragments of tibiae and two patellae were discovered, duplicating the bones of the other group. The disarranged position of the bones suggests a secondary burial but as the burial was at the margin of the area disturbed by gravel removal this can not be eliminated as a possible source of disturbance.

Burial 7. This burial was the westernmost of the main mass of burials. It consisted of the remains of two individuals, evidently quite distinct and separate interments. One (A) consisted of the primary, fully extended burial of an adult, placed on the back with the head to the southwest. The skull was turned on its left side. The arms were extended along the side. Part of the lower limbs were missing, probably due to the action of the power shovel. On top of the right femur were placed the fragmentary remains of Individual B. They con-


LEGEND
EXTENDED BURIAL
FLEXED BURIAL
BUNDLE BURIAL
CREMATION
N
SCALE
0
5 FT.
10 FT.
B 14
B 13
61 FT. TO B13 + 14
B 11
B 5
B 4
B 8
BUNDLE
B 19
B 7
B 12
B 15
B 18
A
B 10
B 22
B 20
B 16
B 21
B 24
B 17
B 9
B 23
PIT?
B 26
B
B 6 BOTTOM
B 6 TOP
B 25
A
B 22
B 24
B 10
B 18
B 26
B 8 TOP
B 17
B 6 BOT.
B 19
B
1
2
3 FT.
CROSS-SECTIONAL DIAGRAM

sisted of a bundle of bones including a mandible, two long bones, several vertebrae and ribs. In view of its placement and the fact that part of the bones of the right hand of Individual A were missing, the grave for the bundle burial would appear to have been dug subseqently to that of the extended burial.

Burial 5. Two burials (B5 and B11) were found slightly isolated from the main mass, the southern margin of the burials being 8' to the northeast of the northern limits of the main burial group. The burials of this region were placed deep in the zone of fine sand. Since at this point the stripping operations for sand and gravel had penetrated to a greater depth, it is not possible to determine whether burials at a shallower depth had been removed by a power shovel. It is certain that shallow burials were present closer to the main mass of interments.

Measuring from the assumed surface height, the depth of Burial 5 was 33". It consisted of a fully extended individual with the head oriented in a west by southwest direction. Both arms were extended along the side. The legs converged slightly at the knees with the lower limbs parallel to each other. With the individual was found an axe of elk antler (Figure 4, D), placed as though the handle had been grasped in the right hand and with the blade of the axe extended under the right femur. The axe is 40 cm. in length, the blade being 15.3 cm. in length and 5.5 cm. wide at the cutting edge. The handle tapers in diameter to a blunt tip and 5 cm. above the end of the handle was a perforation 1 cm. in diameter. Several transverse notches are present in the vicinity of the perforation, perhaps to roughen the handle and provide a secure grip. The perforation, as in the case of the other antler axe, might permit a thong to be securely fastened to the axe so that the user might suspend it from his wrist. Three projectile points (Figure 1, E-G) had been placed immediately to the north of the feet. Since these were not oriented in a uniform direction, it does not seem possible for them to have been attached to a shaft. The points are respectively 39, 40 and 46 mm. in length (see Table 1 for complete measurements). The points were first shaped by percussion flaking and the

edges subsequently retouched by pressure flaking. All are manufactured from chert, but of variable coloration and presumably from different sources. In form, with shallow side notches, they are quite similar to the larger knives found with burials previously described.

Burial 11. To the west and roughly parallel with the previously described burial, was a second group of individuals

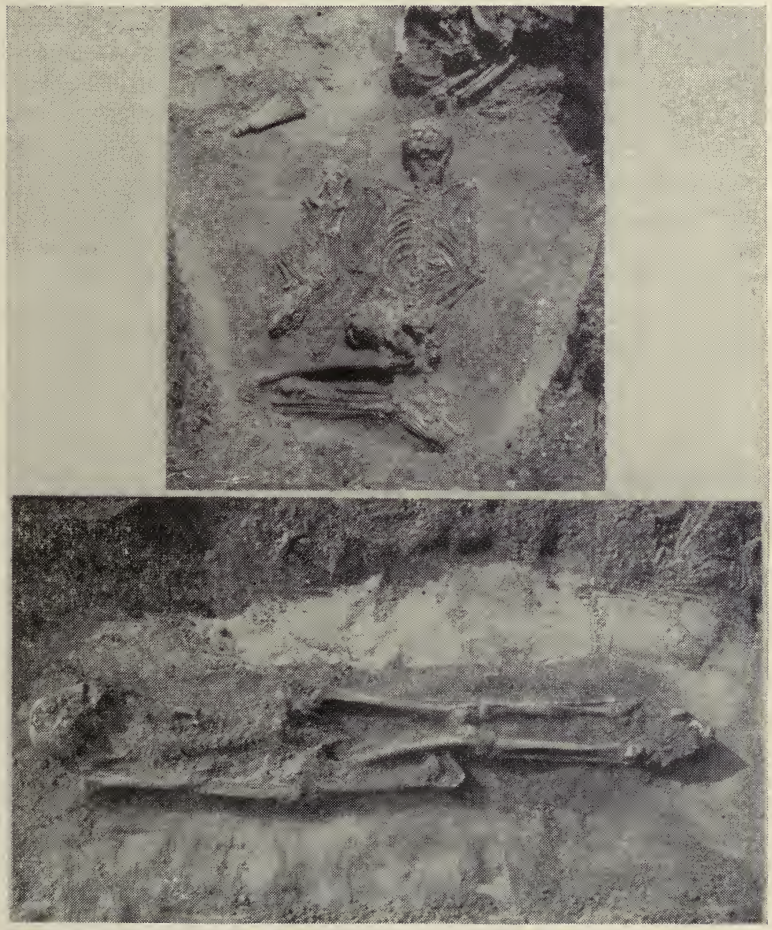


Figure 5

Top—Burial 14, in face down position with dog at side. Bottom—Burial 5 with elk antler axe clasped in right hand.

consisting of the remains of four persons. Individual A was a fully extended burial on the back with the head oriented to the southwest, the skull resting on its right side. In back of the skull, at the occipital region, were two rounded blocks of soft sandstone. The arms were fully extended along the sides of the body and the legs were in a fully extended position, parallel to each other.

Individual B was also a fully extended burial, placed slightly to the northwest of Individual A and at a slight angle to it although the general orientation was still with the head to the southwest. The skull in his instance rested on the left side. Both arms and legs were fully extended, the arms resting at the side of the body. Placed between the forearm and the pelvis was a bone tube manufactured from the ulna of a swan (**Cygnus** sp.?). Both the proximal and the distal ends of the bone had been cut off and a series of notches had been cut along one edge (Figure 4, E). The right hand rested upon the base of a large (110 mm. in length) chipped stone knife manufactured from a mottled reddish-grey chert (Figure 1, H). The knife is similar in type to those previously described. Above the tip of the knife were fragments of antler which when reconstructed proved to be a hollowed section of antler 86 mm. in length. Its appearance suggested that it might be a portion of a handle, but if this is its function it was not attached to the knife at the time of burial. Beneath the distal end of the right femur were the complete bones of one lower leg of a great horned owl (**Bubo virginianus**). Resting across the knees was an apparently unworked ulna of a small mammal.

The outlines of the grave pits were revealed as a reddish sand in the lighter sand region. On this basis it would appear that Individuals A and B had been buried separately since each had a distinct pit outline which overlapped only where the two bodies were nearly in contact. Individual C consisted simply of a fragmentary skull found in an inverted position immediately to the northwest of the skull of A. It was located at a slightly shallower depth and may have no relation to the previously described burials. Individual D consisted of a bundle burial located so that the bones overlapped

slightly upon the right foot of B. It is either contemporary with or later than this burial.

The final group of burials located at the site were found in the wall of the bank on the western margin of the cut made in removing sand and gravel. These burials are 40' northwest of the westernmost burials of the main group. Two burial pits were found in the area, Burial 13 apparently being intrusive into the margin of Burial 14.

Burial 13. This was a compound burial in which three individuals had been placed in a small pit, perhaps about 3' in diameter (part of the pit was destroyed in the commercial operations). Individual A was a primary burial, flexed on the right side with the head to the south by southeast. The skull rested on the right side. Both arms were tightly folded against the chest with the hands under the face. The left leg was tightly flexed with the knee drawn up under the chin, thus forming an acute angle with the long axis of the body. The right leg was not as tightly flexed and forms approximately a ninety degree angle with the long axis of the body. A group of seven small disc beads (7-8 mm. in diameter) of shell were found at the left wrist. Beneath the chin of this individual, one end actually projecting up into the mandible, was a gorget of "sandal sole" shape made of marine conch shell. Since the burial was tightly flexed, however, the gorget may originally have been suspended on the chest. The gorget has a roughly elliptical outline and is 132 mm. in length and 51 mm. in width. Three perforations are present and aligned in the long axis, two being placed near one end of the gorget and the third slightly on the opposite side of the center (Figure 3, D).

Individual B consisted of the disarticulated bones of an adult. The skull rested in an inverted position (base upward). The mandible was also inverted in the southwestern corner of the pit, resting upon other bones. All of the major long bones were present, but were located both above and below the remains of the primary burial of Individual A.

Individual C consisted of the partially flexed burial of an adult female, placed in the bottom of the pit, below A and B. The body rested on the back with the head oriented to the

south. The skull had either fallen forward so that the chin rested on the chest or the curvature of the pit forced it in this position. The arms rested at the sides but with the forearms flexed tightly backward to rest on either side of the skull. The legs were tightly folded and compressed backward upon the body and slightly toward its left side. A group of 12 copper beads, spherical and slightly elongated in shape which ranged from 6-11 mm. in diameter were placed 1" above and 1½" east of the vertebral column. The central portion of the shafts of the leg bones were heavily stained by copper but no copper implement or ornament that could have produced this staining was found.

One possible interpretation that might be given for this burial is that all of the individuals were not interred at one time. Individual C certainly formed part of the original burial. At a later time this grave may have been reopened to add another burial and at this time the copper artifact responsible for the staining of the leg bones was removed. It is not clear whether Individual B may have formed part of the original burial or of the second burial. It is possible that the bones of this individual were disturbed and took their disarrayed position at the time of the second burial. Certainly the placement of the bones above and below Individual A took place at this latter time.

Burial 14. This burial was located immediately to the north of Burial 13 and may have antedated it in time. The primary individual in the burial was in a partially flexed position, face downward, with the head oriented to the southwest. It had been placed in a pit 3.65' deep, 2-2.5 wide and approximately 5' in length. The legs were tightly folded and flexed to the left side of the individual at a right angle to the long axis of the body. The entire trunk and face of the person was in a prone position. The left arm was fully flexed to bring the hand under the left shoulder. The right arm had the forearm partially flexed, bringing the hand under the pelvis. A group of small, as yet unidentified bones were found in the pelvic region of this individual. The remains of a second individual were also in the grave and consisted of the skull (no mandible) and one long bone. The skull

rested on its right side facing the south and the long bone was beside it to the east. The edge of the pelvis of the flexed individual rested upon the skull. Immediately beside the flexed burial was a dog buried on its back with the head to the northwest. The skull is adjacent to the pelvis while the hind quarters of the dog are next to the shoulder.

Summary and Conclusions

To recapitulate the burial information we have prepared Table 1 which summarizes much of the pertinent data. It is essential to stress again that a single burial number can include several distinct burials. In reference to orientation of the head, one consistent feature emerges. Fifteen of the primary burials are oriented to the southwest, 5 to the south and 1 each to the southeast and south-west, 5 to the south and 1 each to the southeast and south-southwest. On the other hand, only a single burial was oriented to the northeast and none to the east or west.

Table 1. Summary of Burial Information, Reigh Site:

No.	Burial Position	Orientation of Head	Grave Goods	Individuals
25	Fully extended, on back (2)	SW	Chipped stone knife	2
6-top	Secondary (?)	—	None	3
6-bot.	Fully extended, on back (2); legs doubled backward over trunk (1); secondary (1); flexed (?) (1).	S(4)	Copper head ornaments; conical bone points; bird bones.	5
17	Secondary	—	None	2
20	Fully extended, on back	SW	None	1
10	Fully extended, on back (4); partial cremation (1 — ?)	SW(4)	Antler tip	5
18	Fully extended, on back(2)	NE	Copper point	1
24	Partial cremation	—	None	1
22	Disturbed; type (?)	—	—	1
26	Fully extended, on back(2)	SW(2)	Chipped stone knife; hematite pepples; Copper point.	2
19	Fully flexed (?)	—	None	1
4	Partial cremation	—	None	1
8	Secondary (?)	—	Chipped stone point	1
21	Fully extended, on back	SW	Chipped stone point	1
15	Partial cremation	—	None	1
9	Fully extended, on face	SSW	None	1
23	Fully extended, on back	SW	Swan humeri; antler axe; hematite pebbles; chipped stone knife; copper point.	1
16	Secondary	—	None	1

12	Secondary(?)	—	None	2
7	Fully extended, on back (1); secondary (1)	SW	None	2
5	Fully extended, on back	SW	Antler Axe; 3 chipped stone points.	1
11	Fully extended, on back (2); secondary (2)	SW(2)	Bone tube; chipped stone knife; owl leg; mammal ulna; antler handle (?).	4
13	Fully flexed on side (1); Secondary (1); partially flexed on back (1)	S (1) SSE(1)	Sandal sole gorget Shell and copper beads.	3
14	Partially flexed on face	SE	Dog	1
			Total No.	44

In the grave goods, it is possible to make a significant distinction in terms of size between chipped stone knives and chipped stone projectile points. We may assume that the objects placed in or near the hand were knives whereas those with other placement may well be projectile points. The range in size for these specimens is given in Table 2 and we may note that there is no overlap in range. The single point which seems almost intermediary in size (R9, Figure 1, J) is one found on the surface of the burial area by Mr. Edward Coumbes and because of disturbance we do not now know, through placement, whether it is actually a large point or small knife. Even including this point, however, the table shows no overlapping in the range in size of the two categories.

Table 2. Dimensions of Chipped Stone Knives and Projectile Points (in mm.)

Specimen No.	Length	Width	Stem Length	Thickness
Knives				
B25-1	75	41	14	10
B26-2	90	45	20	13
R3 -	81	43	15	14
B23-2	73	40	15	13
B11-1	110	53	14	14
Projectile Points				
B5-2	39	24	10	9
B5-3	40	26	11	8
B5-4	46	33	10	6
B21-1	27	22	6	6
R9	61	35	11	10

The probability exists that materials of a perishable nature, such as skins, may have been used in the burials. If they were. no evidence of their existence was found. Interpretation is therefore restricted to artifacts which survived to be recovered

in excavation. An insight into the functional aspects of the specimens recovered may be gained through their association with individual burials. Chipped stone knives were among the more common type of grave goods. Two of them were found as the only object placed in the grave. In both instances they were found with burials where the sex of the individual could not be identified with certainty. In one burial (B21) the skull was missing, but the post cranial skeleton appeared to be that of an adult male. In the second burial (B25) the remains appeared to have been a sub-adult male.

In burials where chipped stone knives were associated with other types of grave goods the identification could be made with greater certainty. A chipped stone knife, a conical copper point, and hematite pebbles were found with an adult female in Burial 25. In Burial 23 a knife, hematite pebbles, a conical copper point, cut swan bones and an antler axe were found with an adult male. Thus knives, hematite pebbles and copper points were associated with and presumably used by both males and females. On the other hand the antler axes were found only with males and may have been used by men alone. Since other types of grave goods were represented for the most part by isolated examples there is little justification for generalization about their use.

An important question remaining to be resolved is whether the series of burials we have described represents:

1) a single cultural complex in which the individuals were interred over a relatively short period of time or whether

2) this area was used for burial purposes over a long period by several cultural groups.

A general observation might be made first. The very concentration of burials appeared to indicate that a well defined area was being used for burial purposes by a given group of people. Sufficient time had clearly elapsed between specific burials so that many of them cut into older ones. Nevertheless they seemed to have been placed in an area delimited by custom rather than being scattered randomly over the ridge.

Linkages among the burials which can be used to build up

evidence to evaluate whether we are dealing with a single burial complex can be made on the basis of superposition of burials and also through the distribution of similar types of artifacts found among the different burials. In Burial 10 a sequence was established where burials were found in an extended position (lying on the back) followed by partial cremation and again by extended burials. Beneath the Burial 10 area were two fully extended burials (B18 and B26) with which were found copper points, a chipped flint knife and hematite pebbles as grave goods. Near this area the individual who was face down (B9) was interred later than the individual in Burial 23 who had a knife, an antler axe, a copper point and cut swan bones as grave goods. In most instances where secondary burials were found (B17, 16, 7 and 11) they appeared to be later than the primary burials. However, at least one secondary burial (B6) is of the same age as the primary burials.

The grave goods are characterized by a decided homogeneity at this site. Knives are projectile points were remarkably similar in form and the copper points were generally alike. Cut swan bones, antler axes and hematite pebbles were also found together in at least one instance. All of these artifacts were found with individuals who were interred fully extended, lying on their backs. These burials also tended to be somewhat older than other types of burials. There are several exceptions to this, however, in at least one instance an extended burial (B25) with a chert knife in the hand cut into an older extended burial lacking grave goods. Furthermore, contemporary burials of paired individuals also lacked grave goods. In addition, at Burial 10, a sequence of primary, partial cremation and primary burials was established, demonstrating that extended burials were not invariably earlier.

On the basis of grave goods alone we have no link between the major portion of the burials with the multiple interment consisting of a primary figure wearing copper head ornaments (B6) and the burial where the sandal sole shell gorget was found (B13). These finds are unique at the Reigh Site and not duplicated among the other burials. There is a possibility that these two burials and the secondary burials in general are somewhat later than the rest of the assemblage. However,

taking into consideration the total body of evidence we are inclined to the view that this series of burials represents a single cultural complex.

The absence of pottery and of implements usually associated with agriculture suggests that the economy was still basically dependent upon the hunting of game and the gathering of wild plants for food. It is probable that there were no fixed habitation sites although for several generations this area was used as a cemetery by this group. There is also some suggestion that certain individuals within the group possessed higher status and there may have been recognized leaders (cf. B6) among them. The presence of the sandal sole gorget made from a marine conch shell is indicative of the existence of a widespread trade, possibly limited to luxury articles, for the nearest source of the shell was the Gulf of Mexico or the South Atlantic coast. The gorget found at this site is not unique in Wisconsin for Brown (1913) had earlier reported on the presence of one found a few miles away in a site along the west shore of Little Lake Butte des Morts.

Further evidence of the status of the Reigh Site is to be found in comparative data. Old Copper cultures of the Late Archaic in Wisconsin were, like the Reigh Site, characterized by having a clearly demarcated cemetery where primary and secondary burials were found in close association. At Osceola Ritzenthaler (1946) found conical copper points and side notched flint blades similar to the ones present at the Reigh Site. A closer parallel exists in the mortuary customs found at the Oconto Site (Rithzenthaler and Wittry, 1952). Extended, partially flexed, fully flexed, bundle and partial cremations were found here. In addition the relatively rare position of prone or face down burial was also found at Oconto. While there are marked differences in grave goods between the Oconto and Reigh Sites, similarities may be noticed in the shape of projectile points and in the presence of hematite and antler tips. In general, relative to the Old Copper sites, there seems to be an attenuation in both types and numbers of copper artifacts at the Reigh Site.

Aside from connections with the Old Copper culture in Wisconsin, relationships are also evident with Glacial Kame

culture. The sandal sole shell gorget found at the Reigh Site (B13) has almost become a diagnostic artifact for this culture. Many of the traits observed at the Reigh Site are found in Glacial Kame sites elsewhere. Matson (1856, as quoted in Cunningham, 1948: 12-18) reported on the Ridgeway Site in Hardin County, Ohio. Sandal sole shell gorgets were found in some of the burials together with chipped stone artifacts, copper implements, shell and copper beads. Varied positions of interring the dead also seemed to be characteristic. Extended, face down, flexed burials and secondary cremations were reported. In addition dogs were found buried beside human skeletons as in Reigh B14.

The Picton Site in Ontario, Canada, is one of the few Glacial Kame sites excavated in recent years (Ritchie, 1949). It shared the trait of having a very diverse pattern of burials with cremations, flexed, bundle and extended burials present. Copper, flint and marine shell artifacts, including the sandal sole shell gorget, were present.

It is apparent that there are a number of general resemblances, particularly in mortuary customs, among the sites where the sandal sole shell gorget has been found. However, the general status of Glacial Kame as a culture is obscure. This is primarily due to the small number of sites which have been excavated with modern methods. In view of this we cannot, at the present time, isolate instances in which a sandal sole shell gorget may be present simply as a trade object or whether we are dealing with a cultural complex.

There is also some disagreement about the temporal position of Glacial Kame. In recent years there has been a general tendency to place it at a somewhat earlier time than had been previously in vogue. At one time Griffin (1948) stated that:

> ". . . the Glacial Kame artifacts suggests that they belong to a Woodland burial complex toward the close of the Hopewellian or Middle Woodland period near the beginning of the period of spread of Middle Mississippi."

He has since (1952: 356) placed it at the end of the Late Archaic. On the other hand Ritchie (1949) specifically considered the Glacial Kame, from the evidence at the Picton Site,

to be Early Woodland in date. A number of other archeologists (Quimby, 1952: 101; Morgan, 1952: 86) concur in an Early Woodland assignment for Glacial Kame.

In summary, the Reigh Site is characterized by a similar varied disposition of the dead as found at the Late Archaic Old Copper Site at Oconto. Further relationship is seen in the persistence of many other Late Archaic traits, such as the use of copper artifacts of the same type found at Old Copper sites. However, the general attenuation in both quantity and type of copper artifacts sets the Reigh Site apart from Old Copper cemeteries. It therefore seems reasonable to assign the Reigh Site to the Early Woodland period and to suggest that the burial complex which characterizes Glacial Kame in Wisconsin was of this date. Thus the site serves to increase our knowledge of one of the least known periods in Wisconsin ranging in time about one thousand years before the Christian era.

Department of Sociology and Anthropology
University of Wisconsin.
Museum of the State Historical Society
of Wisconsin.
Oshkosh Public Museum.

BIBLIOGRAPHY

BROWN, C. E.
1913 The Occurrence of Marine Shells on Indian Sites in Wisconsin. **The Wisconsin Archeologist**, o. s., vol. 12, No. 2, pp. 53-63.

CUNNINGHAM, W. M.
1948 A Study of the Glacial Kame Culture in Michigan, Ohio and Indiana—With an Appendix by James B. Griffin. **Occasional Contributions from the Museum of Anthropology of the University of Michigan, No. 12.**

GRIFFIN, J. B.
1948 An interpretation of Glacial Kame Culture. (Appendix in the paper by Cunningham—see above).
1952 Culture Periods in Eastern United States Archeology. **Archeology of Eastern United States.** The University of Chicago Press, pp. 352-364.

MORGAN, R. G.
1952 Outline of Cultures in the Ohio Region. **Archeology of Eastern United States**, pp. 83-98.

QUIMBY, G. I.
1952 The Archeology of the Upper Great Lakes Area. **Archeology of Eastern United States**, pp. 99-107.

RITCHIE, W. A.
1949 An Archeological Survey of the Trent Waterway in On-

tario, Canada and its Significance in New York Prehistory. **Researches and Transactions of the New York State Archeological Association.**

RITZENTHALER, R. E.
1946 The Osceola Site—An "Old Copper" Site Near Potosi, Wisconsin. **The Wisconsin Archeologist,** n. s., Vol. 27, No. 3, pp. 53-70.

RITZENTHALER, R. E. and WITTRY, W. L.
1952 The Oconto Site—An Old Copper Manifestation. **The Wisconsin Archeologist,** n. s., Vol. 33, No. 4, pp. 199-223.

WITTRY, W. L.
1951 A Preliminary Study of the Old Copper Complex. **The Wisconsin Archeologist,** n. s., Vol. 32, No. 1, pp. 1-18.

REIGH SITE REPORT – NUMBER 3

Robert Ritzenthaler with reports by
Neil Ostberg, Kirk Whaley, Martin Greenwald, Penny Foust, Ernest Schug, Warren Wittry, Heinz Meyer, Edward Lundsted

Perhaps the most exciting and significant discovery in a decade of Wisconsin archeology has been the Reigh Site on Lake Butte des Morts, Winnebago County. This large burial ground is the first in situ manifestation in our state of the little known Glacial Kame culture, a culture which portends to provide us with a chronological and perhaps cultural bridge between Old Copper and Early Woodland.

While there are no Carbon 14 dates for Glacial Kame, Dr. Griffin (personal communication) and others believe that this culture was flourishing during Late Archaic times, perhaps 4000 years ago, to at least partially fill the time gap between the Early Archaic Old Copper peoples of 5-7000 years ago, and the Woodland folk who presumably arrived around the time of Christ. While there is little doubt as to the chronological position of Glacial Kame, its culture affiliations are much more tenuous. The cultural connection of Glacial Kame with Woodland, for example, is vague and unconvincing. Some similarity in burial techniques, and comparable artifacts such as copper wedges and anculosa beads are among the few traits that the two groups have in common. The case, however, for Glacial Kame being closely related or even a continuation of Old Copper is quite strong. If the Glacial Kame peoples were not actually physical and cultural descendents of

the Old Copper folk, they were certainly followers of the basic cultural traditions. A list of the trait similarities between the two groups would include such negative factors as absence of pottery, agriculture, and mounds; identical burial practices, and a strong copper tradition emphasizing utilitarian implements over ornaments. While some of the copper objects are identical, such as the crescentic knives, rolled beads, and conical points, there are really more differences in artifact types than similarities. The idea of the socket tang, for example, is retained by the Glacial Kame people, but the blade-forms shift from a median ridge to the beveled edge. The Reigh Site has also produced culturally unique artifacts such as the elk antler ax handles and a copper head ornament, previously unknown to the archeological world. The diagnostic trait of Glacial Kame as reported for other areas (Cunningham) [1] has been the so-called "sandal-sole gorget," a shell breast ornament of distinctive shape and usually three perforations. One of this type was found in the original excavation at the Reigh Site. Other materials of interest from the site include: the "ace of spades" shaped copper points, copper wedges, socketed copper knives with beveled edges, notched swan bones, conical antler points, and anculosa shell beads. The importance of the Reigh Site, however, is the fact that here is an assemblage of materials that indicate a particular culture not previously known for Wisconsin. It was discovered in July of 1953, excavated as a project of the Wisconsin Archeological Survey, and reported upon in the March, 1954 issue of the Wisconsin Archeologist. [2] Since the first excavation there have been explorations by private individuals to augment the original data. One such report entitled "Additional Material from the Reigh Site" by Neil J. Ostberg appeared in the March, 1956 issue of the Archelogist. The purpose of the present report is to assemble and record all available shreds of information not included in the first two reports.

One problem of the editor in publishing such reports is that of keeping the terminology consistent. This is difficult to do,

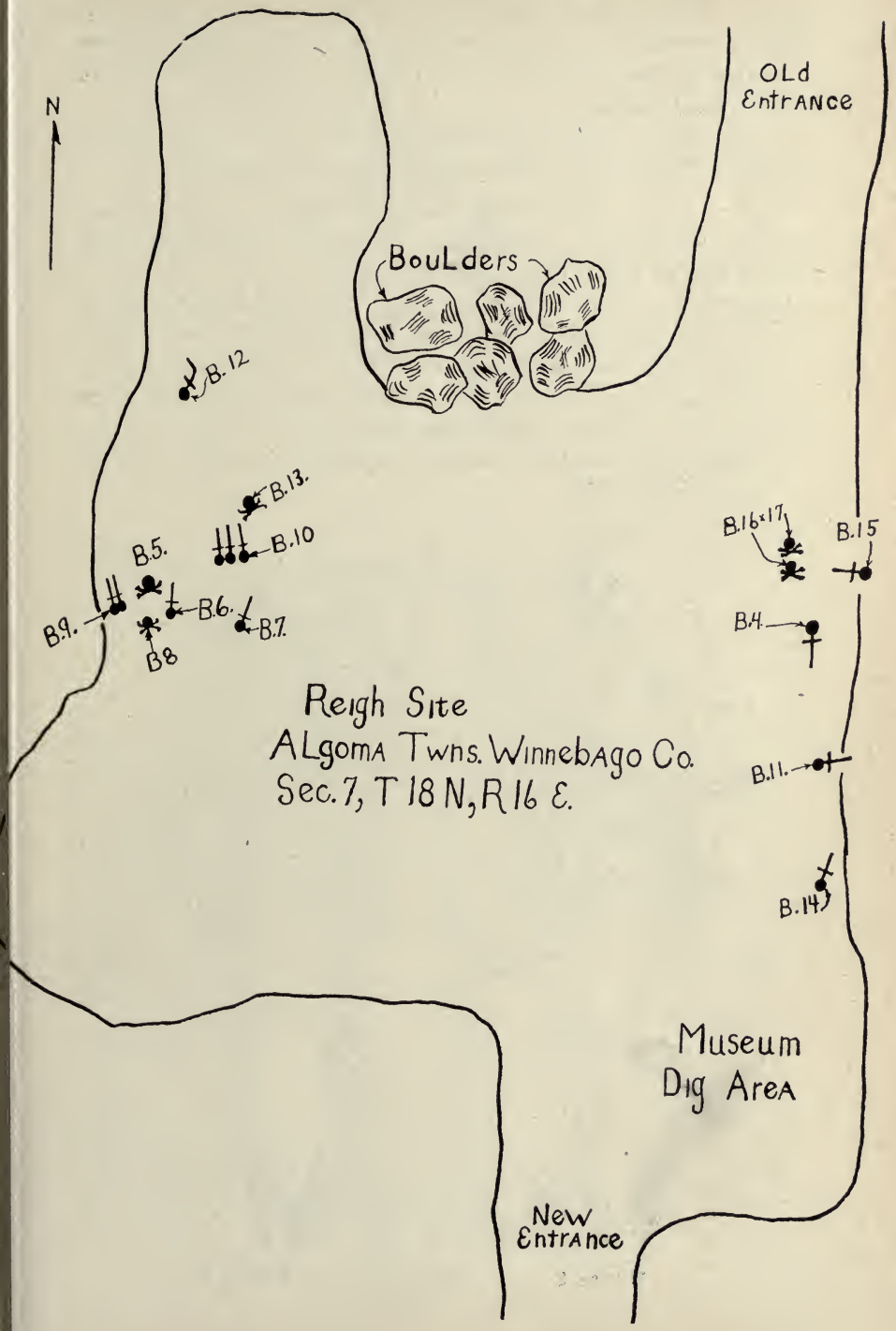
---

1 Cunningham, W. M. A Study of the Glacial Kame Culture. Occ. Contr. Museum of Anthrop., U. of Michigan, No. 12, 1948.

2 Baerreis, Daifuku, Lundsted. The Burial Complex of the Reigh Site, Winnebago County, Wisconsin.

especially when plates are involved and already lettered, but more often because the use of a particular implement is actually not known. Thus we have not altered authors' terms "celt," "wedge," "chisel," because actual usage is debatable, but it is necessary to point out to the reader that these terms refer to a single type of copper artifact. The two socketed copper pieces in Ostberg's Burial 10, however, have been changed from "points" to "knives," because the asymmetrical blades and single sharpened edge is rather conclusive evidence of their use as knives. We have also taken the liberty to refer to the elk antler pieces as "ax handles" rather than "axes" as in the original report, based on our opinion that some sort of a stone or metal blade was attached to these. As an experiment a copper spud from the Osceola Site was slipped onto one of these handles, and a neater, snugger fit could hardly be imagined (Fig. 1). It should be emphasized that no copper spuds were found with the three handles recovered from the Reigh Site, and that the use of spuds with such handles is as yet an opinion rather than fact. A copper spud found at the site in 1899 (see Wittry's report) lends additional credence to this theory, however. Finally, to clarify one item in the original report, the two conical points described as

Figure 1


N
OLd
Entrance
BouLders
B.12
B.13.
B.10
B.5.
B.9.
B.6.
B.7.
B8
B.16×17
B.15
B.4
B.11.
B.14
Reigh Site
ALgoma Twns. Winnebago Co.
Sec. 7, T 18 N, R 16 E.
Museum
Dig Area
New
Entrance

"antler" in the text and "bone" in the inventory and cut-lines are actually antler.

We wish to thank the authors for their reports and loan of matrials for photographing and reproducing herein.

Report by Neil J. Ostberg

The following is an inventory of burials found after those described in the author's previous report.

Burial No. 4. East side of pit (Fig. 2), adult male, buried in flesh fully extended. Left hand clenched (Fig. 3) as if holding the shaft to which the antler point was hafted. The second antler point was found at the right arm pit. Small unidentified fragment of copper under skull. Depth 3' 4", directly above water deposited gravel layer. Date of find, April 15th, 1956.

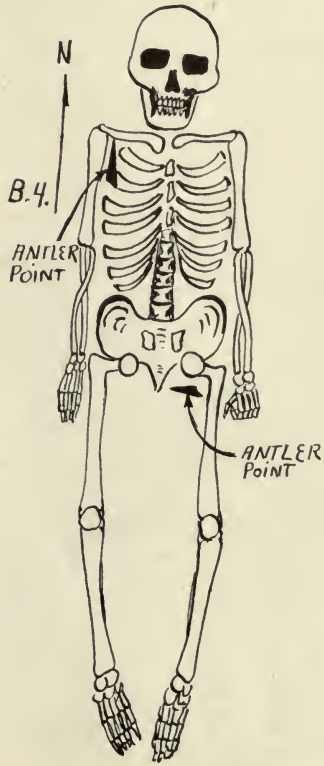


Figure 3

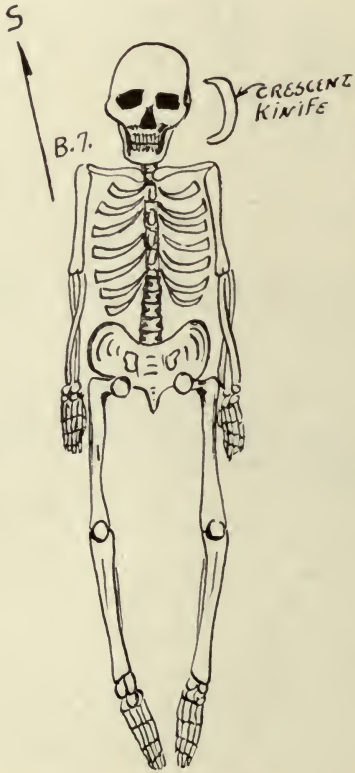


Figure 4

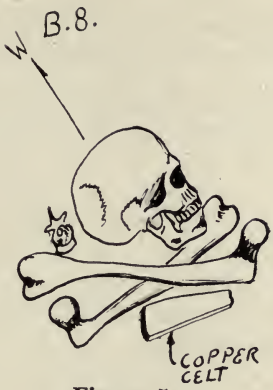


Figure 5

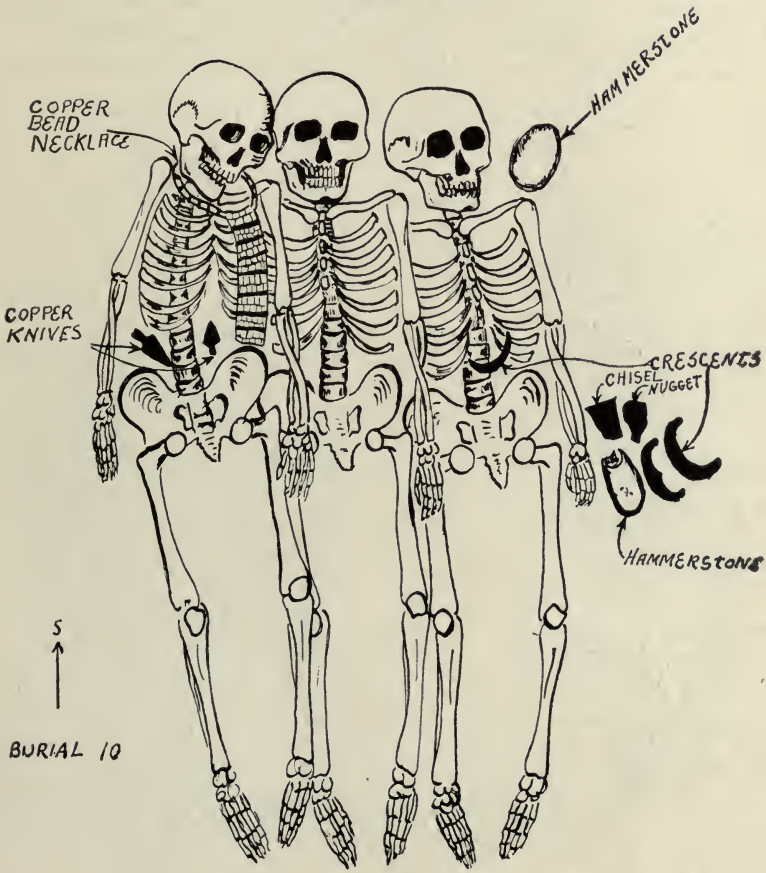


Figure 6

Burial No. 5. West side, young male, bundle, no grave goods. Depth 5' in gravel. Date of find, June 1, 1956.

Burial No. 6. West side, female, old, buried in flesh. Depth 3½'. Human cremation at the abdomen. June 2, 1956 in gravel.

Burial No. 7. (Fig. 4) West side, adult, male. Buried in flesh fully extended. Depth 4'. Copper crescent placed at the west side of skull. Found in gravel. Heavy concentration of red ochre about burial. June 2, 1956.

Burial No. 8. (Fig. 5) West side, sex ?, bundle, adult old. Depth 4'. Copper celt alongside upper bone of left leg. Only productive bundle found at this time by me. June 9, 1956.

Burial No. 9. West side, adults, 2, males. Possibly twins because of similarities in skull and bone structure. Heavy red

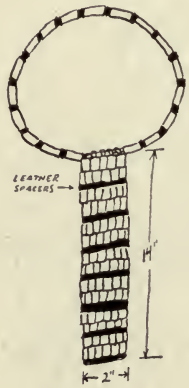


Figure 7

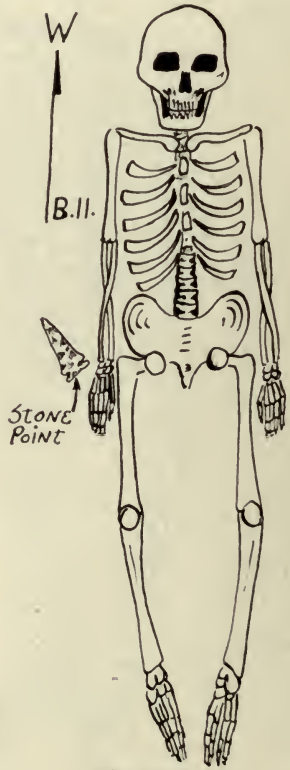


Figure 8

ochre about burial. Fully extended. Depth 4½'. June 23, 1956.

Burial No. 10 (Fig. 6). West side, 3 adults, male. All buried in flesh and fully extended. Depth 5'. Below gravel layer in coarse sand and gravel mix. Extremely heavy concentration of red ochre about all parts of the three individuals. Anculosa-shell beads scattered about burial with a concentration of beads about the center individual's left hand. Two hammer-stones, 3 crescents (1 with incised decoration), 1 chisel, 1 nugget (possibly worked), 2 copper knives *, beaded necklace. For locations check drawings. Blade of chisel fits in designs on crescent. Necklace sketch is included (Fig. 7). August 25, 1956.

Burial No. 11 (Fig. 8). East side, adult. Buried in flesh fully extended. Depth 1½'. Bone in last stages of decomposition. Sex undeterminable. Impossible to save bone. One stone

* Wood fragments from one of the knife sockets were identified as birch by Forest Products Laboratory, Madison.

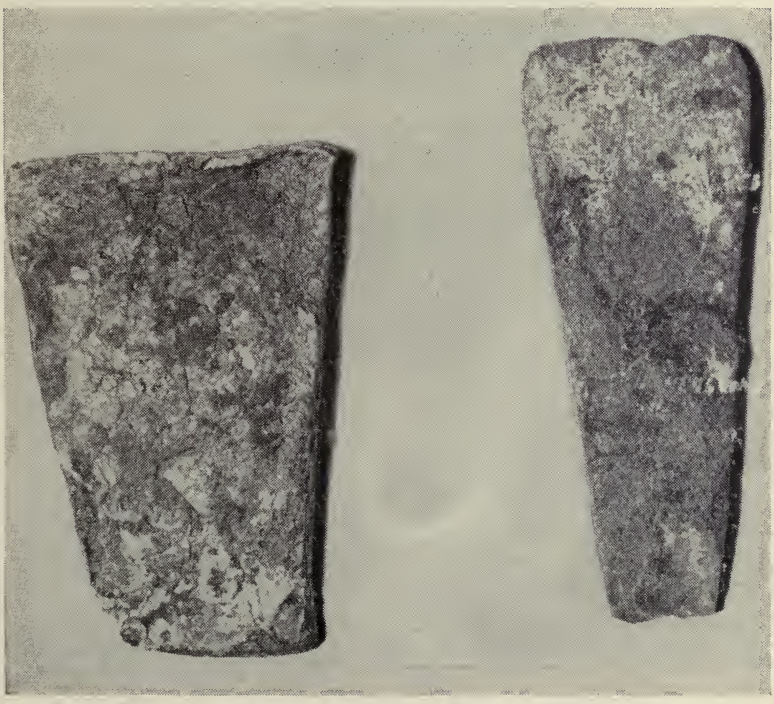


Figure 9. Copper Wedges. Ostberg Collection.

Figure 10. Copper knives. Three crescent type (lower one with incised line decoration), and two socket-tang type. Ostberg collection.

spear found at the right hand. September 9, 1956.

Burial No. 12. West side, adult, buried in bent position, buried in flesh. Large fire pit adjacent to burial. Depth 6½'. September 9, 1956.

Burial No. 13. West side, bundle partially disturbed. Depth 2½'. Child or young adult. No grave goods. September 9, 1956.

Burial No. 14. East side, buried in flesh fully extended. Adult, female, middle aged. Depth 4'. No grave goods. September 15, 1956.

Burial No. 15. East side, adult. Buried in flesh fully extended. Depth 1'. Bones in last stages of decomposition. Two fragmentary copper awls on pelvis. September 15, 1956.

Burial No. 15 and 17. East side, bundles, depth 3½'. Adults, old, no grave goods. September 16, 1956.

Report by Ernest W. Schug

My first visit to the Reigh Site in Winnebago County took place on April 26, 1955. It was shortly after walking into the gravel pit that I discovered several bones protruding from the east face of the excavations. Upon closer observation I found

Figure 11. Two conical antler points, one chipped-stone point. Ostberg Collection.

Figure 12. Beads. Rolled sheet copper, and anculosa shell (Leptoxis praerosal). Ostberg Collection.

that some of these bones were human and others appeared to be those of a large animal. I began digging down through the sand from the original top surface to the level of the bones which were about 2½ feet below the surface. Now I was looking at the exposed bones from above and was able to get a better view of what I had found.

This turned out to be a burial pit for three individuals. Two of these were male flexed burials and one was a bundle re-burial. Among one of the flexed burials were the larger pieces of an animal bone which I first saw protruding from the side of the pit. These after reconstruction turned out to be parts of an elk antler axe handle (Fig. 13). To my knowledge there have been only two other such specimens found in Wisconsin and they also were found here at the Reigh Site, in Winnebago County. These two are at present on display at the State Historical Museum at Madison.

My specimen measures in overall length 12½ inches by 7 inches at the head. Both ends of the head were sharpened and presumed to have been used as cutting edges. The tip end of the handle, which originally was the antler point, had been cut off probably to prevent the sharp tip end from injuring its owner as he carried it.

The second burial contained a 4 inch long chipped stone

Figure 13. Elk Antler Handle. Schug Collection.

knife (Fig. 14) which was lying directly beneath the base of the skull. This was all that I found included in the three burials.

Later, on a short visit to the Reigh Site on July 4th, 1955, I picked up a 4½ inch copper knife with the aid of my then newly purchased metal detector. It was lying in disturbed sand about 8 inches below the surface. This took me less than 20 minutes of looking to find, and proved enough for so hot a day.

My latest find was on October 23, 1956 when I found, in a section previously dug over, a copper pendant measuring 1¼ inches in length with a single hole punched or drilled through

Figure 14. Copper knife, copper pendant, marine-shell bead, Chipped-stone knife. Shug Collection.

the narrower top end, and one polished disc shell bead.

Since then I have spent several Wednesdays probing and digging with Dr. Bruder at the Reigh Site for any overlooked burials and arifacts, but thus far have uncovered no additional material. Of course once you have the "Indian Relic Hunting Bug" as I have had for the past 20 years, you keep going back time and again always hoping that under the next shovel full of earth will be some rare sought after specimen of the early Indian culture.

Report by Kirk Whaley and Martin Greenwald

The following specimens (Fig. 15) were obtained during September, 1956:

One copper wedge was found at a depth of about 2 feet in

Figure 15. Copper wedge and two marine-shell beads. Whaley-Greenwald Collection.

a disturbed area northwest of original excavations by the University of Wisconsin. It is 4⅞ inches in length, 2⅛ inches across the top (which shows evidence of hammering) and tapering to a fairly sharp bit ⅞ inches in width. It is square in cross-section, its greatest thickness being ⅜ inches. It was found in an upright position, apparently associated with a burial, the nearest bones of which were about one foot away.

Above this same burial (and 1 to 1½ feet below surface) we found two shell beads. They are 7/16th inches in diameter and cylindrical in shape.

Also included in this area was a dog skeleton. The animal was about the size of a coyote according to Walter Pelzer, Milwaukee Museum taxidermist, who did the identification. This specimen was donated to the museum.

Report by Phil Wiegand

The three specimens (Fig. 16-17) here described were all found in disturbed soil among the boulders at the north end of the Reigh Site, during September, 1956.

The copper projectile point is 1 - 13/16 inches in length, and 11/16 inches greatest width. Sixty copper beads (restrung as a necklace in the photo) averaged about ⅜ inches in length, and occurred within an area of about a foot. They are made of sheet copper folded into a flattened cylindrical shape. A section of deer jaw shows 15 incised lines running vertically along the exterior (buccal) surface. Positioning of the specimens in terms of the skeletal material could not be determined, although skeletal material was scattered throughout the area.

Report by Penny Foust

My six copper specimens (Fig. 18) were all found in one small area, apparently in a single burial pit, at the west side of the Reigh site, in the general vicinity of Ostberg's Burial 7 (see map). Three spear points ("Christmas Tree" shape) have the socket tang and beveled blade. The longest one is 4 inches and lightly patinated. The other two, 3½ and 3¼ inches in length, show heavy acid corrosion. The wedge is 3¼ inches in length with hammered top tapering to a 1⅝ inch wide bit. The stemmed spearpoint is 3¼ inches in length. The crescentic knife is 5⅜ inches at greatest width.

Figure 16. Copper Beads and Point. Wiegand Collection.

Figure 17

Report by Warren L. Wittry

1899 Discovery at the Reigh Site

The museum of the State Historical Society contains three copper implements (Fig. 19) found with a gravel pit burial on the Okrou farm on the south side of Lake Butte des Morts in the Town of Algoma, Winnebago County. They were unearthed in 1899 and presented in that year to the Society by D. W. Osborn of Oshkosh.

There is no doubt that the location is the same as the Reigh site and that the 1899 find belongs to the same archeological complex revealed in the 1953 fieldwork. (The name of this farm is variously spelled in the contemporary Winnebago County Plat books and atlases as: Okreug, O'Krueg, O. Kreg, and Okrou).

The wedge (type VI-G of the writer's classification) and the crescent (type III-C) duplicate recent discoveries reported elsewhere in this issue. The spud (type V-C) is a new trait to be added to the trait list for this complex. Since the implements were found with a burial, they do not represent a cache. They were tabulated, however, along with other caches (Wittry, p. 15) in an attempt to show how such finds from various localities were related to each other through the recurrence of the same types in association.

WITTRY, WARREN L.
1951 A Preliminary Study of the Old Copper Complex. **The Wisconsin Archeologist**, n. s., Vol. 32, No. 1, pp. 1-18.

Report by Heinz E. Meyer & Edward Lundsted

Introduction

On May 23, 1955, Terry Radig phoned James E. Lundsted, Curator of Anthropology Oshkosh Public Museum, indicating that he had discovered some bones and pottery protruding from the west wall of a gravel pit on the property of Matt Reigh, located on the south shore of Lake Butte de Morts in Algoma Township, Winnebago County.

Mr. Lundsted and Mr. Stuart Mong, Director of the Oshkosh Museum, went out to the Reigh Site on May 25 and made a superficial examination of the area. Lundsted noted

Figure 18. Copper Artifacts. Foust Collection.

that the area contained the remains of at least two refuse or possibly burial pits. He unearthed some pottery and bones but most of the pits had been destroyed by a power shovel in the process of removing fill from the area.

Mr. Mong's interest became focused in an area on the opposite wall of the pit from which Lundsted was probing and in

Figure 19

Copper spud, wedge, and crescent found in 1899 at the Reigh Site. State Historical Society specimen Nos. A1587, A1566, A1582; Neg. No. WHi(X2) 7945.

which appeared, in profile, a peculiar reddish strata of fine sand about two and one-half feet below the surface. Further probing of this area revealed bone that had a marked greenish tint which Lundsead recognized as being caused by the presence of copper salts. These gentlemen decided to discontinue any further probing until they could consult with Heinz E. Meyer, who had been notified of the find and was on his way to the site.

It was almost 5:00 P. M. by the time Mr. Meyer arrived at the scene. Despite the late hour it was decided that excavation should start immediately because of a fear that if it were put off till the following day the material might be lost to the children and souvenir hunters who had come to watch the activity in the gravel pit.

The Reigh farm has been the intermittent source of sand and gravel fill for a period of approximately 40 years. It was not until recently, however, that large quantities of fill were removed from the farm. Extensive excavation by ground moving equipment led to the discovery of the burial complex in 1953. Further earth removal in 1955 led to the discovery of the burials to be described in the following article.

Description of Site

Due to the removal of fill, the floor of the gravel pit is rapidly taking the shape of a giant horseshoe. Extending into the center of the pit is a finger of high ground that has not been used recently as a source of sand or gravel. It is evident that soil removal operations had been carried on in this area from time to time with the removal of about a foot to a foot and one-half of top soil. The excavation created by this operation appears then to have been used as a dump for refuse and very large boulders. These boulders may have been removed from the farm land or pushed into this hole by machines as gravel removal proceeded. It is in the west wall of the finger that the burials were found (near the "B" in boulders on Ostberg's map).

In profile the burial area was stratified into several types of soil. Immediately under some very large boulders lay a disturbed, humus-laden layer of earth interspersed with gravel about one to one and one-half feet deep, suggesting previous

earth removal operations. Under this layer appeared an apparently undisturbed strata of fairly coarse gravel ranging from 8 to 12 inches in depth. Then came a layer of sand, 6 to 8 inches deep. This sand strata contained the burials. Just below the burials was a hard-pan layer of earth about one-half inch thick. Below this was sterile sand.

Method of Excavation

Two problems presented themselves in the excavation of these burials; the first was the lateness of the hour, the second dealt with the problem of removing the huge boulders that apparently lay over parts of the burial. Because of the general fear that any delay might mean the loss of some valuable information and possible artifacts, it was decided that the burial might best be uncovered in two stages. The first stage consisted of earth removal up to the first boulder.

The earth was removed from the top down to the level at which the burials were exposed in profile. The purpose of this was to see if there was an evidence of a pit when viewed from the top. Interestingly enough, no such evidence of a pit appeared in either the humus layer or the gravel layer. Even in the sand layer, there was no clear cut evidence of a pit. Not until the trowels scraped down to the sand, which was stained a reddish brown, was there any clear indication of a break in the continuity of the various levels of earth. A close scrutiny of the burial area in profile also revealed no clear impression of a pit.

As excavation of the red tinted sand proceeded, it became evident that this peculiar color was created by the presence of red ochre. Careful examination of this sand revealed specks of charcoal and great amounts of pigmentation. The pigment was of such quantity that it thoroughly stained the bones found in the burial a reddish-brown.

These facts suggest that this interment was probably accomplished by a great deal of ceremony, since it must have required some extended effort to grind this large amount of pigment and spread it over the entire burial. The charcoal also suggests that some sort of ceremonial burning took place over the open grave. The burning was not of such sufficient heat as to cause any of the bones to be charred.

Continued removal of the stained sand soon revealed the first of three copper implements. This implement was lying on the lower lumbar vertebrae of a human vertebral column. The corrosion of the copper implement had stained the bone and part of the ground a brilliant green.

Finally the entire burial area up to and partly under the first large boulder was exposed. It was now evident that the grave contained two individuals placed side by side on their backs with the arms resting along side their bodies (Fig. 20). The burials were oriented in an almost due east and west position with the heads of the skeltons to the west.

The skull and shoulder region, as well as the upper parts of the arms, were missing from the northernmost skeleton.

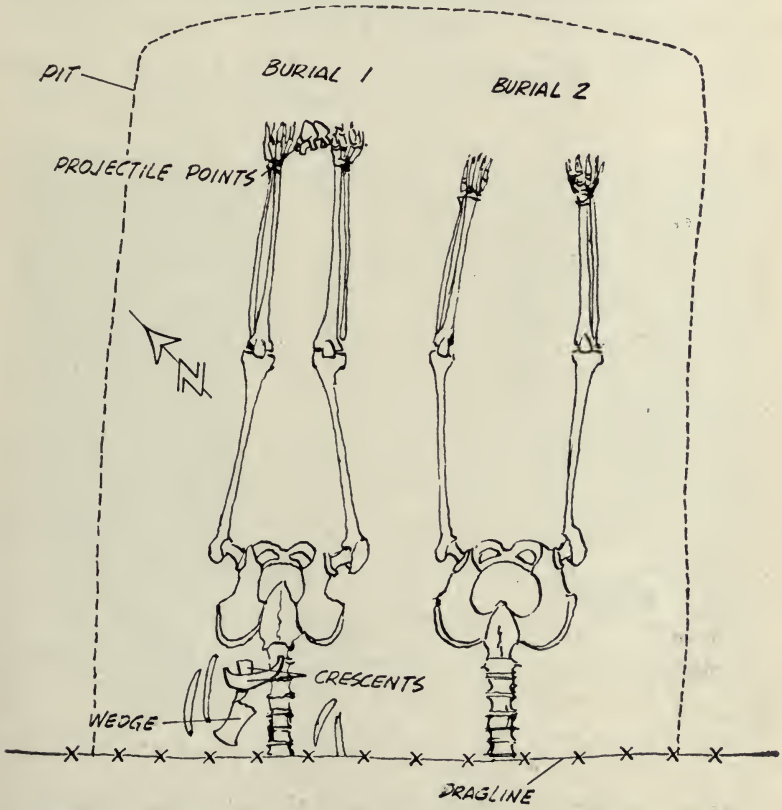


Figure 20. Diagramatic sketch of double burial at Reigh Site.

Most of the upper region, from the head to the pelvis, was missing from the other skeleton. These bones undoubtedly were removed by earth-moving equipment in the process of getting sand or gravel.

The bones generally were in a very bad state of preservation, except in those regions in which copper salts from the corroding copper implements had impregnated the bone of the vertebral column of burial 1.

Three copper implements (Fig. 21-22), consisting of two crescent shaped blades and one celt, were found in association with burial 1 in this first phase of excavation. It was obvious that these implements had been placed upon the abdominal region of the buried person, since the pronged crescent blade lay across the second, third and fourth lumbar vertebrae. The second crescent lay under both the pronged crescent and the celt. The celt lay immediately to the left of the vertebral column, extending diagonally from the first lumbar to perhaps the tenth thoracic vertebra. Since earth pressure caused the pronged crescent to be bent around the third lumbar vertebra, the blade was weakened sufficiently to cause it to crack and break when it was picked up.

Also found in association with this skeleton was a bracelet of shell beads fastened by a copper clip (Fig. 23). This bracelet was found around the right wrist, to the right and underneath the ala of the ilium. The right ilium of the pelvis had been forced down by earth pressure over the right wrist.

It was difficult to accurately ascertain whether there was one or more bracelets since two different types of shell beads were found *. Snail beads and clam shells were mixed together suggesting that it was only one bracelet. This opinion is further strengthened by the fact that only one clasp was found. However, it could be that several strands of beads had intertwined and that later earth pressure forced them together making it appear as only one. This is not at all impossible since the snail and clam beads appeared to be strung in no set pattern.

The south skeleton or burial 2 was in a still worse stage of

* Note: The Ostberg collection of shell beads includes campelona, Marginella, and Anculosa. (R. R.)

Figure 21. Crescent blades found in association with burial 1. Note punctate design on upper blade.

Figure 22. Copper celts or wedges found in association with burial 3 and 1. Left celt appears to have evidence of woven material on it. Right celt was found in association with burial 1 in the region of the vertebrae.

preservation. The power shovel had cut through the area on an angle in a N. W. S. E. direction and thus removed greater portions of the upper part of the body than was the case in burial 1. Also, the bones of burial 2 were of much lighter construction. This fact, no doubt, contributed to the cause of their more rapid disintegration. The pelvic region had almost completely disintegrated. Portions of the lower arms were visible as well as scattered pieces of bone which appeared to be the lower ribs. No artifacts were found in burial 2.

The second phase of excavation had to be postponed until the following Saturday. It was necessary to remove two large boulders in order to get at the remaining parts of the burials. With this accomplished the method of excavation was similar to that of the first phase described above. Earth removal proceeded by easy stages through the various layers

Figure 22a. Detail shot of netting on copper wedge

of soil until the tell-tale, reddish-tinted sand was reached. The faint outlines of a pit were visible in the gravel layer, which was something that was not ascertainable in the first phase of excavation.

With the full uncovering of the lower extremities of these two skeletons, it was evident that this was truly an extended burial. These lower portions of the skeletons were in a much better state of preservation than the upper portions had been. Red Ochre covered all of these portions of the burials and bits of charcoal were found on and around the bones, suggesting ceremonial burning over the open grave. No evidence of charred bone was found.

With the complete exposure of the bones, it was obvious that burial 1 was the more heavily built of the two skeletons. The long bones were very heavy in contrast to burial 2. This suggests the possibility that burial 1 is male and burial 2 female. The region of the knees in burial 1 was rather large. Noticeable, also, was a decided anterior-posterior bend of the remaining portions of the femora.

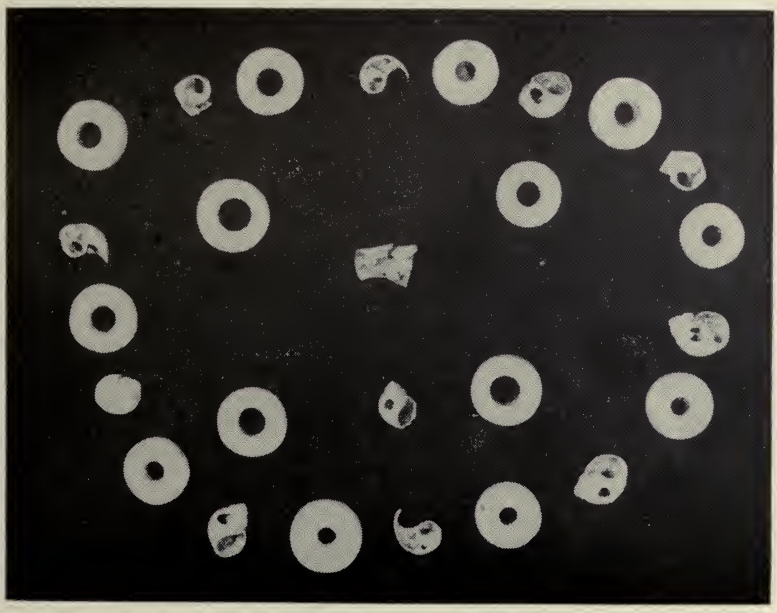


Figure 23. Shell beads and copper clip (center) found around right wrist of burial 1.

The feet of both skeletons pointed skyward. Between the feet of burial 1 lay the second series of copper implements to be associated with this find. Five copper points (Fig. 24) lay between the calcanea, pointing towards the soles of the feet. It was evident that the shafts or arrows with the copper points had been placed between the legs of the buried individual.

The long bones of skeleton 2 were of light construction and quite straight. Similar to the findings of the first phase of excavation, this burial had no artifacts associated with it. Also, this skeleton extended about 6 inches further to the east than skeleton 1. This was due to the placing of the skeleton rather than to any greater height. The head of skeleton 2 probably was placed in a position adjacent to the shoulders of skeleton 1. This, however, can only be inferred since as recorded previously, the upper portions of both skeletons had been destroyed by a power shovel.

The actual size of the pit in which these two individuals were buried could not be determined. However, one dimension, the width was measurable. This proved to be 8 feet across at the level of the burials. Undoubtedly, in profile, it was wider at the top of the pit because a slight outward slant

Figure 24. "Ace of Spades" shaped projectile points found in association with burial 1. Left to right points 1, 2, 3, 4, 5.

of the edges was noticeable in excavation. No measurements were made at higher levels, however. The only measurement is that of the actual burial level; thus, the degree of slant to the pit in profile cannot be accurately stated.

The pit extended 1 foot 2 inches beyond the feet (east) of skeleton 2. If the assumption is made that the individuals were 5' 6" to 6' and the edge of the pit above the heads of the skeletons was another foot, the general shape of the pit at the burial level would be very close to a square 8 by 8 feet.

After this second phase of the excavation was completed, the pertinent facts were recorded and photographed. The burials were then picked up for later study.

Attention was then focused on an area 30 feet to the southeast on the edge of the finger of high ground that extended into the gravel pit. One of the children had discovered pieces of bones and excavation soon showed that this was not an actual interment but rather the bones of some burials that had been dragged or dropped and then covered over by either a drag line or power shovel. None of the bones were articulated in any manner to suggest either a flexed, extended or bundle burial. Only parts of one or two or possibly three skeletons were found. These bones consisted primarily of the upper portions of the skeleton, i. e. ribs, clavicles, humerus, etc. At first this suggested that these bones might be the upper portions of burials 1 and 2 which were dropped into this position by earth moving equipment. The thing that strengthened this contention was that one of the clavicles was stained green, indicating the presence of copper salts. However, further excavations revealed a femur about 1 foot away from the shoulder and thoracic parts which had been excavated. Whether this femur belongs to the other bones is questionable. It appears to be lighter in color and further study is necessary to make any final disposition of the matter.

Even though this skeleton material is not an actual interment in the true sense, further reference to it in this article will be spoken of as burial 3.

Considerable earth was removed from this general area because the material was discovered to be lying in no set pattern either horizontally or vertically. The bones varied in

depth from 6 inches to 24 inches with their longitudinal axis at all angles considered in the above two planes. However, though more earth was removed, the bones were all found scattered through an area 2 feet wide and 4½ feet long, running parallel to the western edge of the finger of high ground excavated by the power shovel. This burial area, like the finger of ground, ran in a N. W.-S. E. direction.

It was in this area that the second copper celt was found. This celt (Fig. 22) was located about a foot from any bone material in the N. W. portion of the area described above. It was surrounded by sand, and even though it was badly corroded, the copper salts had not stained the soil in any appreciable manner. The stained clavicle lay about three feet to the S. E. with the odd femur lying about one-half way between the two. The position of these items, plus the fact that the ground generally was disturbed, strongly suggests that these items are an accidental reburial caused by the earth-moving equipment.

Description of Artifacts

It is noteworthy that all artifacts with the exception of one celt were found in association with burial 1 in the large double grave. A description of these artifacts follows beginning with the five projectile points found between the heels of burial 1.

Projectile Points (Fig. 24)

Three dimensions will be given in chart form; they are the **Length** which is measured from the tip to the base of the projectile, the **Width** which is measured through the widest points on the head of the projectile, and the **Thickness** which is derived by measuring a point half-way on the axis extending between the widest points on the head of the projectile. All measurements will be given in millimeters.

	Length	Width	Thickness
Point 1	63 mm	30 mm	4 mm
2	60 mm	30 mm	3 mm
3	56 mm	30 mm	2½ mm
4	48 mm	30 mm	2 mm
5	51 mm	25 mm	2 mm

These points generally are well made and display a marked degree of good workmanship. The outstanding feature, however, is that portions of the wood from the hafted shaft has been preserved by the corrosive action of the copper. The height of the shaft on the projectile point is clearly visible and can be measured. This measurement follows. It is determined by measuring from the base of the projectile to the impression of the crown of the shaft left on the point. By subtracting this figure from the total length it can be determined how far the point extended into the shaft.

	Height of Shaft	Height point extends above shaft
Point 1	32 mm	31 mm
2	34 mm	26 mm
3	25 mm	21 mm
4	24 mm	24 mm
5	27 mm	24 mm

Points 1, 3 and 4 show marked basal thinning. This thinning appears to have been produced by hammering. Also, there is thinning on the edge of the points in the area in which the greatest width occurs. It appears as if the shoulders of the point were produced by hammering and thinning out of this region.

Point 2 exhibits a marked flaw just above the base. It appears as if the process of annealing a copper flake failed to properly mesh with the rest of the projectile or possibly some impurity in the copper later worked its way out of the point creating the flaw.

Tanged Crescent Blade (Fig. 21, lower)

The overall maximum length of this artifact is 154 mm. The maximum width of the blade proper is 24 mm. and the maximum thickness measures 3½ mm. This blade is badly corroded, though one end is in a much better state of preservation. There is a good sized nick, 18 mm. long, on the cutting edge of the left end of the blade as it is pictured. The tangs, which measure approximately 20 mm. for the right one and about 15 mm. for the left, are undoubtedly the means by which the knife was hafted to a handle of wood or bone. The left end of the blade is broken because of being bent around a vertebra.

Crescent Blade (Fig. 21, upper)

This blade differs from the one above in that it has no tangs. Its overall maximum length is 139 mm., its maximum width 28 mm., while the maximum thickness is 4 mm. Another significant feature is the punctated design on one side of this blade. These marks are square or rectangular in shape and spaced about 4 to 5 mm. apart along the non-cutting edge. This design on this blade suggests the possibility that this is not a utilitarian blade but rather an ornament to be worn, even though the blade appears to have a cutting edge. This edge is not as sharp and thin as that of the tanged crescent blade, however.

Celt or Wedge

This celt pictured on the right hand side in Fig. 22 is a well constructed artifact. Its overall length measures 86 mm., its maximum width is 46 mm. which tapers down to 31 mm. at the cutting edge. The maximum thickness of the celt is 8 mm. The top edge of the celt appears as if it has been hammered upon by some other implement.

Copper Clip

This is a piece of rolled sheet copper, badly corroded, 12 mm. long and 8 mm. wide shown in the center of Fig. 23. It was probably used to hold the strings of beads together.

Beads

The snail beads measure about 13 mm. in length. They were pierced to allow for stringing.

The marine shell beads show considerable working on them. They are round and have a hole drilled through them for stringing. The holes in some of the beads are tapered indicating that the drill didn't go through as far on one side as the other. The beads measure 13 to 15 mm. across and 3 to 4 mm. thick. There were more beads of both varieties than are pictured, but these had distintegrated to the point that only tiny bits of shell remained.

Celt or Wedge

This celt pictured on the left side in Fig. 22 is the most interesting of all the copper artifacts. It was found in the region of burial 3, and is of much cruder workmanship than the other celt described above. Its maximum length is 105 mm., while the maximum width of 46 mm. tapers down to 27 mm. at the cutting edge of the celt. The maximum thickness is 8 mm.

The importance of this celt lies in the fact that it had preserved on it evidence of some material that is woven or tied into a mesh of about 2 mm. square. It has not been determined whether this mesh is of animal or plant fibre or whether this is cloth or basketry. The preserved material is located in the upper right hand corner of the celt as pictured in Fig. 22.

General Conclusions

As is already apparent, conclusions and inferences have been made throughout the foregoing paper. However, in the light of previous excavations at the Reigh Site this find adds some important information to the answering of the questions posed by Dr. Baerreis in the Wisconsin Archeologist, Vol. 35, No. 1, March 1954, pp. 31-35.

It is apparent that the double burial described above is unique from any of those excavated in 1953 in several respects. These include: 1. The east-west orientation of the burials, 2. The covering of the entire double burial with ground red ochre, 3. The apparent ceremonialism accompanied by burning over an open grave, 4. The inclusion of copper artifacts unlike any found in 1953. 5. The preservation of perishable materials through the effects of the corrosion on copper.

Some of the above are features which can be used in determining whether the burials at the Reigh Site represent a single cultural complex or several cultural complexes. It should be noted that some of the features listed by Baerreis are also found in the double burial described above. These include such things as a double interment, extended burial, red ochre, artifacts buried with bodies and shell beads.

This double burial seems to be part of what has been pre-

viously identified as the Old Copper Complex in the Wisconsin Archeologist, Vol. 32, No. 1, March 1951, p. 11. The crescents are representative of type A and B, p. 12. The celts are variants of tvpe G, p. 13.

Of further interest is Wittry's Tabulation of Cache Associations in his article on Old Copper. In this he points to a cache found on the Okrou farm. Among the artifacts he lists one crescent type A, one celt type G, and one spud type C. It is our understanding that the Okrou farm and the Reigh farm are the same farm. If this is true it then appears that perhaps the burial complex at the Reigh Site is best placed in the Old Copper Complex, rather than in the Early Woodland period where Baerreis feels it is reasonable to place it. More information on the matter will no doubt help to clarify and answer the questions raised about this very interesting and productive site.

The find described in the foregoing article also raised some interesting questions. First of all, what type of wood was used by these people for shafts for their projectile points? This question was answered in part by the personnel of the Forest Products Laboratory who examined one of the points and concluded that the shaft was made of birch.

Another question that no doubt will start all sorts of speculation deals with the material preserved on the celt found in association with burial 3. If this is woven cloth, would this not be incongruous with concepts of a hunting and gathering culture such as Old Copper is supposed to be? * Up to this point no determination has been made of what the material is made. It is hoped that may be determined soon. Truly, the Reigh Site has been one of the most productive and provocative sites in all of Wisconsin.

---

* This appears to be fibre netting. (R. R.)

THE OLD COPPER COMPLEX: AN ARCHAIC MANIFESTATION IN WISCONSIN

Warren L. Wittry and Robert E. Ritzenthaler

It seems appropriate, particularly in the light of the recent radiocarbon dates for an Old Copper Site, that the accumulated information about the Old Copper complex be summarized for the use of those interested in the prehistory of the Northeast. While some of the data presented here have been previously published in greater descriptive detail, they are briefly reviewed because they represent the factual basis for the definition of the complex as a local cultural variant in the Archaic period. The radiocarbon dates and certain new data add materially to the basis for the interpretation of the remains of these early inhabitants of Wisconsin. We use the term "Archaic" to refer to a time period rather than a cultural assemblage, although we shall discuss the cultural traits that appear to fit into this time period in the locale under discussion.

The distinctive utilitarian copper implements of the Great Lakes area, long known to have their center of distribution in Wisconsin, were first set apart as an industry by McKern in 1942. He suggested an early time horizon for them based on their characteristic deep acid erosion, their lack of association with any of the known local cultural manifestations, and the presence of some of the types in early horizons in the Northeast. Although there had been earlier, poorly documented discoveries of these copper types in caches or as burial associations, the vast majority of them occurred as surface finds and very little was known of their cultural context until the discovery and excavation of the Osceola site in 1945. The existing descriptions of the Old Copper complex (industry or culture) are based largely on that site and museum collections (Martin, Quimby, and Collier 1947; Miles 1951; Bennett 1952; Quimby, 1952).

The Osceola Site

The site (Ritzenthaler 1946) was exposed by the action of the waters of the Mississippi River in the NW¼, Sec. 11, T2N, R3W, Grant County, Wisconsin. Previously, the cemetery had been located on the bank of the Grant River, but the building of a dam at Dubuque raised the water level and

widened the Mississippi at this point. A large section of the cemetery had apparently been eroded by the river so that it is not possible to determine the total number of individuals originally interred. An estimate of 500 is based on the concentration of burials in the excavated area and a guess as to the size of the area that had been destroyed.

Burials. The burials were found in the lower half of a 5-foot layer of black sand overlying a culturally sterile beach of white sand. An area about 70 feet long and 20 feet wide remained of this deposit of black sand at the time of excavation. The dead were disposed by bundle reburial in either single or multiple interments or by partial cremation of the bones. There was no evidence of the burning of articulated bodies. In three instances, a layer of small stones had been placed directly over a burial. Due to the nature of the black sand outlines of graves that might have been dug were not discernible. Certainly no pits were dug down into the old beach. The conclusion reached in the field was that the burials were made over a period of time rather than as a single mass burial. The skeletal remains were very poorly preserved. In some burials even the teeth were in the last stages of decay. Occasionally, only fragments of bones preserved by contact with copper were all that remained of a burial. At one end of the pit an intrusive flexed burial was encountered. This was well preserved compared to the condition of the bundle reburials.

Artifacts (Fig. 71). In addition to artifacts of Old Copper types, both chipped- and ground-stone implements were found with burials. More often than not, however, copper and stone artifacts were not directly associated with a burial despite their placement in the burial layer. Possibly some or all of these artifacts were originally with a burial, all traces of which had since disappeared. In distribution, the artifacts seemed to be highly concentrated in the center of the area, fading out rapidly toward its edges. The burials, too, tended to thin out toward the edges of the area, but not as rapidly as the artifacts.

Three categories of chipped stone were represented, each having an extremely limited variation in form. Drills occurred

in a single form, a thin T-shaped outline. End scrapers having side notches and a straight base may be modified projectile points. The characteristic type of projectile point has a blade with roughly parallel sides, side notches, and a straight or (more frequently) a concave base.

Three categories can also be listed for the ground-stone articles. Hammerstones and small grinding stones with flat or slightly concave surfaces resulting from use were found during the excavations by the Milwaukee Public Museum. The third category, consisting of two ground and polished bannerstones, was not described in the report on the site. They are reported to have been found, one at, and one near, the burial site by amateur archaeologists. Edwin Goke of Platteville, Wisconsin, has a winged bannerstone and several copper artifacts from the burial layer. Frank Achen of Madison, has a bannerstone of a prismoidal form which he found 75 feet south of the area where excavations were conducted.

The types of copper implements include awls (most common), socketed spuds, socketed projectile points, a knife, and ornamental forms. The few ornaments have been classified as a finger ring, a small clasp, a bracelet (?), and an unidentified hooked object. Several rolled sheet-copper beads were found separately in the burial layer.

Miscellaneous items in the inventory include galena cubes, clay wads, and small lumps of red ocher. None of these show any indication of having been worked and none were found with burials. Fragments of grit-tempered, cord-marked Woodland pottery were dispersed in the sand over and, to a much lesser extent, in the burial layer. Available data point to the fact that the few sherds found in the burial layer are the result of subsequent disturbance, and should not be considered as part of the Old Copper complex.

The Oconto Site

Like Osceola, this site (Ritzenthaler and Wittry 1952) is primarily a cemetery, although evidence for occupation existed in scattered post holes and a small number of unassociated artifacts. It is located on a sand and gravel ridge about 150 yards from the present course of the Oconto River about 3 miles above its entry into Green Bay on Part 4, Gov. Lot 8,

FIG. 71. Osceola site artifacts. A-C, socketed copper spuds; D, copper knife; E-F, bannerstones; G, conical copper projectile point; H-I, copper awls; J, chert scraper; K, socketed copper projectile point; L-M, chert drills; N-T, chert projectile points. ½ natural size.

Sec. 24, T28N, R21E, Oconto County, Wis. Also like Osceola, this cemetery had suffered the removal of a large portion of its area but in this case it was through the operations of a commercial gravel company during the 1920's. Charcoal was found in some of the post holes indicating that they were not caused by exploratory tests of the gravel company. The post holes were rather evenly spaced about 1.5 feet apart and had an average diameter of 0.8 foot. From 5 to 8 holes were found in curved alignments; in one area there was a suggestion of an oval structure 13 feet in width.

There were three zones in the natural stratigraphy of the site. The humus layer was 0.5 foot thick, overlying a 1.5-foot layer of yellow sand which was underlain by gravel. Work at the site was conducted in two areas. Area 1, the main area, lay at the eastern edge of the pit left by the gravel company. Area 2 was a small island left in the center of the pit where the humus layer had been heaped up over the original surface by the gravel workers. Area 2 was about 80 feet from Area 1. If there had been burials in between the two areas as concentrated as they were in the excavated portions of the site, there must have been several hundred originally present.

Burials. The outstanding feature of the Oconto site is the great diversity in burial types, though all burials were made in pits or graves extending down into the gravel to an average depth of 2.5 feet below the surface. Pit outlines were not discernible in the yellow sand so the levels of their origins could not be determined. Outlines in the gravel were round for the cremation pits and elliptical or rectanguloid for the graves. The primary burials showed no consistent orientation for the head or face though most of the graves had roughly the same alignment as the long axis of the gravel ridge, a northeast-southwest direction. Graves and cremation pits were separated from each other by distances of one to five feet, and in spite of this close placement did not have an arrangement in rows. There were only two instances in which a grave intruded into another grave. This occurred in one location where the first burial had been placed in a pit in a prone position. Subsequently, a cremation pit was dug partly intruding into the earlier burial. On top of the cremation an

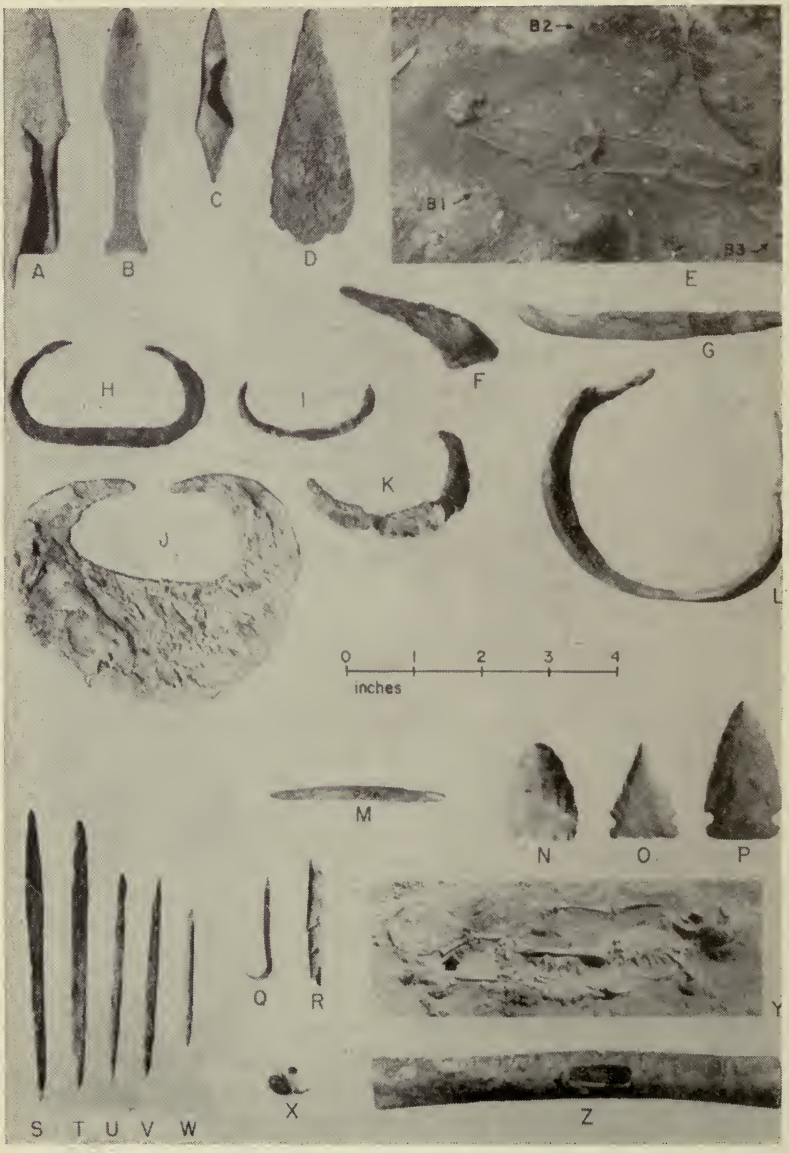


FIG. 72. Oconto site artifacts and burials. A-D, copper projectile points; E, Area 2, Feature 1, Burials 1, 2, and 3; F-G, copper spatulas; H-K, copper bracelet; M, bone awl or gorge; N, chert scraper; O-P, chert projectile points; Q, copper fishhook; R, sheet copper spiral; S-W, copper awls; X, snail shell bead; Y, Feature 5 showing bone whistle and hematite lumps at base of child's skull; Z, whistle made from left humerus of trumpeter swan. ½ natural size.

Feature Number	Description	Associations	Illusthation (Fig 72)
SINGLE INTERMENTS:			
1	Infant, partially flexed on right side, head south	Copper crescent, fiber cord and birchbark preserved by contact.	K
2	Adult, bundle reburial		
4	Adult female, extended on back, with lower legs folded underneath upper legs, head south, face east	Turtle and duck bones near skull	
9	Adult fully flexed on left side, head west, face north		
10	Adult male, extended on back, head north, face west		
17	Adult, partially flexed on left side, head north	Chert scraper next to arm	N
19	Child, extended on back, head southwest		
21	(?), extended, head north		
22	Adult female, bundle reburial		
Area 2, 1	Burial 1: adult male, extended on back, head west, face north; grave intruded into Burial 2	Copper spatula near left knee, fiber cord preserved by contact	E-G
Area 2, 1	Burial 3: adult, prone position, arms flexed, head east, face north, lower torso and legs missing due to intrusion by cremation of Burial 2		
Area 2, 4	Remains of skull, indeterminate		
Area 2, 5	Remains of skull, indeterminate		
MULTIPLE INTERMENTS:			
3a	Young adult male, bundle reburial, in pit over **b**		
b	Male, partially flexed on left side, head south, face west, over **c**	Chert point 5 inches from knee	P
c	Adult female, extended in prone position, head south, face west, hands under pelvis		
5a	Adult female, extended on back with right leg flexed over torso, left lower leg folded under upper leg, head south, face east; so flexed in pit to make room for **b**		
b	Child extended, head north, face east	Bone whistle and 2 hematite lumps at base of skull	Y-Z
6a	Adult, bundle reburial, over **b**	Copper Fishhook	Q
b	Adult, fully flexed on left side, head south, face east		
7a	Child; disarticulated bones in southwest corner of pit		
b, c, d	Disarticulated bones of 3 adults in pit over **e** and **f**		
e	Adult female, partially flexed on left side, head south, face west	2 antler tips between head of **f** and feet of **e**	M-O
f	Infant, extended, head south, face east	Fish bone awl and chert point near face	
13a, b	Remains of 2 individuals; probably bundle reburial		
14a	Cremation, over **b**		
b	Bundle reburial		
15a	Adult male, fully flexed on right side, head north, face west		
b	Represented only by extra pelvis and phalanges in pit over **a**		
16a, b, c	2 adults and 1 infant, bundle reburial		

extended skeleton was placed, the grave for it intruding into the cremation pit (Fig. 72 E). This evidence, together with that provided by the multiple burials, counters any interpretation that would account for the variation in burial types through temporal changes in the burial pattern. Though all of the skulls were crushed, preservation of the skeletal remains was fair, probably a result of the drainage conditions.

Cremation pits ranged in diameter from two to five feet. Several of the eight pits excavated contained the partially burned bones of more than one individual but the exact number could not be counted. Evidence of fire on the bottoms and sides of the pits, blackened stones, and the presence of charcoal show that the cremation took place in the pits. Skull fragments, single teeth, split bones, and the scattering of bones in the pits indicate that the bodies were either dismembered or had been given a tree or scaffold burial before cremation. Bones of the hands and feet were occasionally found in their natural relationship. Small deposits of partially burned human bones and ashes probably represent the remains of only one individual and may be dumps of remains that were burned elsewhere. These were found primarily in the sand and did not extend down into the gravel.

The graves contained primary and secondary burials in both single and multiple interments. Almost the complete range of variation in burial type occurred in the graves. Extended burials were the most frequent (9), 7 being supine and 2 prone. There were 7 partially flexed, 4 fully flexed, and 5 in indeterminate positions. Twelve bundle reburials were found. Table 14 summarizes the burials found by the field party. Two articulated (extended?) burials and a cremation pit had been dug up by local residents prior to the excavations by the joint field party from the State Historical Society and the Milwaukee Public Museum. Since there had been no previous record of the site, these earlier discoveries led to the acquisition of the property by the Oconto County Historical Society and the excavations under discussion here. The designation of sex in the table is based on field observations and is therefore tentative.

Artifacts (Fig. 72). In contrast to the Osceola site, the

majority of these specimens occurred as burial associations. In addition to a considerable number of chert flakes, the only artifacts not found with burials were 4 chipped-stone projectile points and 10 copper awls. These, for the most part, were encountered near the top of the yellow sand layer. Artifacts were found with all of the forms of burial including cremations, but with only about ⅓ of the total number. More of them were found with infants and children than with adults. A few of the artifacts described here were found with burials by local residents when the site was first discovered.

Projectile points and one triangular object, possibly a scraper, are the only tools of chipped stone. Two points associated with burials somewhat resemble the Osceola points, one having an obviously reworked blade. The points found in the humus or disturbed areas consist of 2 corner-notched points and 2 contracting-stem points.

The most interesting find was a bone whistle made from the left humerus of a swan (**Cygnus** sp.), erroneously reported by Ritzenthaler and Wittry (1952) as a deer tibia. The present identification was made by Robert Blake of the Chicago Natural History Museum and was corroborated by Alexander Wetmore who tentatively further identified it as a trumpeter swan. The whistle is an unusual type, having a large rectangular opening near the center and 2 small round holes oppositely placed in grooves on the sides under the larger opening. The 3 rows of short parallel incised lines extending over the length of the whistle resemble the type of ornamentation sometimes found on copper implements (Winn 1942).

The mandible of a fish had been modified into a double-pointed awl or gorge. Two antler tines having worked tips occurred as burial associations and one charred antler tip was found in a concentration of charcoal in the sand layer.

A number of perforated pond-snail shells (**Campeloma decisum**) were found around the wrist of one of the extended burials. These were probably part of a bracelet, the stringing evidently being through the artificial perforation and the natural aperture. Two fragments, apparently unworked, of the shoulder of a marine shell (**Fulgur perversus**) were

found in a grave. Fragments of a mussel shell (**Unio ellipsis**) were also found as a burial association.

Of the copper artifacts, awls having a square or rectangular cross section were the most common type. Both socketed and flat-tang projectile points were present. A triangular object found in a cremation pit may have been a small celt or the blade of a point. A fishhook, a copper rivet, 2 spatulas, and 4 crescents complete the list of utilitarian forms. It may be, however, that one or two of the crescents had a more ornamental than utilitarian usage to judge by their fragility and form. An impression of animal fur is preserved in the coating of copper salts on the largest crescent. Two fragments of cord were preserved by contact with copper implements. They are of vegetable fiber, formed of 2 strands twisted in a counter clockwise direction. Copper ornaments include a bracelet, a spirally wound coil, and several small clasps of the same type found at Osceola.

No pottery was found in any of the work at the site, and in view of the early radiocarbon dates the site can be placed, with little doubt, in the preceramic period.

Radiocarbon dates. Two dates for the Oconto site were obtained from samples of charred wood found in cremation pits (Libby, personal communication). Sample C836 gave a result of 5600 plus-minus 400 years. This sample was collected from Burial 2 of Feature 1, a cremation in Area 2 (Fig. 72E). This pit is the one which intruded into the grave of a prone burial and which had an extended burial intrusive into it. The pit, before being disturbed by the digging of the grave for the extended burial, was about 3.5 feet in diameter and extended down into the grave 2.8 feet below the surface. In addition to charred bones probably representing more than one individual, 2 copper spatulas were discovered in it. The second date resulted from a test of charcoal from 2 features mixed together to make an adequate sample. The mixture consisted of 12 grams (C837) from Feature 3 in Area 2 and 8 grams (C839) from Feature 11 in Area 1 (Square 25L1). Feature 3 was a cremation pit of the usual type found at the site and had a diameter of 5.5 feet. It contained no artifacts. Feature 11, located 107 feet from Feature 3 on a bearing of

51° 30′ east of magnetic north, is recorded as a concentration of charcoal and contained a charred antler tip. The date for the mixed sample is 7510 plus-minus 340 years. *

Comparison of the Two Old Copper Cemeteries

There are few specific traits indicative of a close relationship between the Osceola and Oconto sites. The main connection lies in the occurrence of Old Copper implements at both of the sites and certain similarities in the burial patterns. Whereas bundle reburial and cremation were the only methods of burial at the Osceola site, about half of the burials at Oconto were of these types and the remainder were primary interments. The Oconto site lies within the area of concentrated distribution of surface finds of the Old Copper implements in Wisconsin, while the Osceola site is situated outside this area (Fig. 70). Although the possibility exists that the differences may be the result of the removal of large areas of both sites prior to excavation and hence an incomplete sampling of them, they might also have been caused by geographical or temporal factors. Radiocarbon material was not obtained at Osceola, and there is no good evidence to indicate which is the older site. The skeletal material at Oconto was in a far better state of preservation, but this can be accounted for on the basis of much better drainage conditions. On the basis of distribution, however, with Oconto within the area of concentration, it is possible that Osceola represents a later outpost. If this be true, the rolled-socket copper projectile point found at Oconto is an earlier type than the angular socketed, ridge back type found at Osceola. The latter is the most common form, while the former ranks second among all the forms classified as projectile points. Furthermore, since we have drawn a parallel between the decoration of the whistle and of certain copper types, it should be pointed out that the rolled-socket type is frequently decorated and the angular-socketed, ridged-back type is ornamented only extremely rarely (Winn 1942).

---

* As reported by W. F. Libby in **Science** 120:740 (1954), the dates are 5600 plus-minus 600 years for sample C-836 and 7510 plus-minus 600 years for the mixed samples C-837 and C-839. In Libby's report C-837 should read Feature 3, Area 2.

The Old Copper Physical Type

One male skull from the Osceola site and 1 male and 4 female skulls from the Oconto site were submitted to Georg K. Neumann for analysis. His report (personal communication, 1954), states that in the light of the radio-carbon dates this is the most ancient cranial material that can be demonstrated to represent a variety of American Indian which can be linked to the Black Sand focus people of Illinois, the later Hopewellians of the Ohio and Illinois valleys, and the historic Delaware Indians. The 2 males tended to be of good size and generally robust while the females were rather small and fragile. The 6 skulls can be characterized as long headed with cranial indices of 74.86 for the Osceola male, 76.76 for the Oconto male, and an average of 72.48 for the Oconto females. All 6 are moderately high vaulted, relatively narrow faced, and relatively narrow nosed. Morphologically the skulls exhibit great homogeneity and can be described as well developed possessing well developed supraorbital ridges, somewhat retreating foreheads, some sagittal cresting, more than moderate lambdoid flattening, and a bun-shaped occiput. The cheek bones are not prominent and rather small in the females, the orbits tend to be square to oblong, and the chins are of the narrow but bilateral type. Without doubt the group can be assigned to the Otamid variety of Paleo-Amerinds (Neumann 1952.)

The Old Copper Complex

The discrepancy of 1910 years between the 2 radiocarbon dates for the Oconto site is difficult to interpret. Apparently, there were no unusual laboratory conditions that might account for it and the same collecting technic, using metal containers, was used for all the samples from the site. We doubt that the cemetery was used over a period as long as suggested by the dates. There were two few graves with artifacts in association and such a limited range of artifact types represented that no chronological distinctions could be made. There is a possibility that the one sample was contaminated by natural conditions, such as rootlets, while still in the ground. If this were the case, the older date would be the more reliable. Of the several implications this early dating has for

the archaeology of the area, one is that man must have entered Wisconsin soon after the retreat of the Mankato ice. The typologically early fluted points found in Wisconsin (Byers 1942; Ritzenthaler and Scholz 1951) possibly represent an occupation earlier than that of the Old Copper people. Unfluted points of a lanceolate shape with a straight or concave base, and with or without basal grinding, and gravers have been found as surface finds at a number of locations in southern Wisconsin. Four such points and 2 gravers were found at one site where excavations were conducted (Baerreis 1953). The similarities of these points to Starved Rock Lanceolate led Baerreis to regard them as being pre-Old Copper and in the Early Archaic period.

Little can be said about the specific origins of the Old Copper complex. In the past, some archaeologists working in the Northeast have postulated origins for certain of the copper and ground slate types of the Northeast with the Old Dorset culture. Different approaches to the problem showed that this north to south diffusion was unlikely (Ritchie 1951; Hoffman 1952). In view of Hoffman's suggestions in regard to the radiocarbon dating of the Wisconsin III glaciation and the early cultures of the Northeast, the traits in question should be regarded as being earlier in the Great Lake area. Even before the dates were known, and as suggested by Ritchie's argument, the case was not very strong for the Old Dorset origin. The radiocarbon dates for the Oconto site tend to confirm these conclusions and indicate that if any diffusion of these traits took place, it was northward. We postulate that the origin of the Old Copper complex occurred when an early hunting and gathering group living in the Wisconsin area began to utilize native copper for the production of the distinctive utilitarian types of that area. At first, the nuggets in the glacial drift provided a handy source; later, copper was quarried from the trap rocks of Isle Royale and the Keweenaw Peninsula.

In one sense, the Old Copper complex might be considered as only the group of heavy utilitarian copper artifacts that are demonstrated to have a cultural association through their similarities in typological make-up, their common area of dis-

tribution, and their repeated association in caches and in graves (Wittry 1951). We feel, however, that the definition should be expanded to include all of the culture (in the archaelogical sense) of the people who are known to have first used these copper types. This group of people is known primarily through thousands of surface finds and by the excavation of 2 of their cemeteries. While this information represents only segments of their life, it appears that these types of remains are the most significant left in the archaeological record. Future researches will, of course, fill in more completely the picture as it now stands.

The excavation of the 2 cemeteries and an analysis of earlier discoveries have provided an archaeological context for the Wisconsin coppers. Still, some of the interpretation rests on information resulting from comparisons with other materials. In pointing out affiliations indicated by the artifacts and burial customs of the Old Copper complex we will not repeat those already mentioned in the works cited on the first page of this article.

Specific trait correspondences are expressed in 2 of the traits recently added to the complex. The bone whistle from the Oconto site bears a close resemblance to instruments of the same peculiar type from Kentucky shell middens (Webb 1946: 304) and Okhoma (Bell and Baerreis 1951, Pl. 3). One of the Kentucky whistles, from the Carlson Annis mound, was found with a burial, at the base of the skull, just as the Oconto specimen had been placed, (Compare Fig. 72 Y with Webb 1950, Fig. 5 B). The Annis mound and Indian Knoll, the provenience of another specimen, have radiocarbon dates ranging from about 4000 to 7000 years while the Oklahoma whistle is of the Fourche Maline focus, an Archaic complex which persisted through pottery horizons (Bell 1953). Before the Osceola bannerstones came to light, Titterington (1950) and Bennett (1952) had drawn attention to the similarity of the artifacts from the Hemphill mound in Brown County, Illinois, and those of the Osceola site. The Osceola bannerstones are almost exact duplicates of the two found at Hemphill in 1933 (Knoblock 1939: 201-10).

The scattered occurrence of Old Copper implements in

some of the cultures of the Great Lakes area is, in many instances, the result of trade, but a few cultures, particularly those having a number of traits in common with the complex, may have been historically related. The finds of Old Copper implements in Ontario (Kidd 1952; Popham and Emerson 1954) are evidence for an extension of the complex in that area. Comparisons of the burial complex of the Oconto site reveals close parallels in the burials of the Brewerton and Frontenac foci of the New York Archaic (Ritchie 1944: 379. 385). Cremations are lacking in the Lamoka focus (Ritchie 1944: 394) and also in the Kentucky shell middens, but do occur in the lower levels of the Lauderdale focus (Webb and DeJarnette 1942: 113, 315). On the whole, the Archaic burial complexes of the northern areas of Wisconsin and New York seem to be more closely related to each other than to those of the Southeastern Archaic. There are, however, differences in the physical type between these early populations.

The Old Copper complex must have existed over a considerable length of time as suggested by a vast number and diversity of forms of the copper implements included in the complex. The present evidence indicates that the 2 most common types of copper projectile point have temporal significance. It should be pointed out that aside from flat axes and awls, none of the Old Copper types of copper implements have been found in artificial mounds in Wisconsin. A few of the other types, however, have been found in mounds in Illinois and Minnesota (Cole and Deul 1937: 110; Winchell 1911: 370-1, 378).

A number of traits of the Old Copper complex survive into later periods. From the Reigh site near Oshkosh, Wisconsin, a burial complex very similar to that of the Oconto site is reported (Baerreis, Daifuku,and Lundsted 1954). Correspondences in artifacts include 3 copper projectile points of the type shown in Figure 72 C, 3 unperforated bone tubes made from trumpeter swan humeri and incised in the same manner as the Oconto whistle, and lumps of hematite. These lumps were associated with 2 of the bone tubes in one of the burials just as they were at Oconto, but in this case they were placed in front of the skull. There is a close similarity between the

chipped-stone projectile points from the Oconto and Reigh sites. They are side notched like the Osceola points but the sides of the blade are more tapering. The survival of some traits of the Old Copper complex into later periods makes it difficult to establish a point in time where the complex is no longer identifiable as such. This most certainly occurred before the building of burial mounds in Wisconsin. The problem is somewhat clarified when we examine certain discoveries made in the state over the past century. Included here are a number of burials found in the gravel or sand knolls or ridges in eastern Wisconsin. It may or may not be fortuitous that the area where these gravel-pit burials appear corresponds to the area of concentrated distribution of the Old Copper type implements (see map).

These burials (Brown 1924; Rueping 1944) ranged from individual interments to whole graveyards and were obviously made by several distinct cultural groups, but the majority of them are apparently more or less related to the Old Copper complex. The discoveries were made by workmen and are not well documented but the preservation of associated artifacts in private or museum collections frequently provides a supplement to the meager written accounts. Almost all of the forms of burial present at the Oconto site are represented in these finds. Along with copper implements, several traits are outstanding among the associated artifacts, including birdstones, large "ceremonial" flint blades, the use of red ocher, columnella shell beads, and sandal-sole shell gorgets. Few of these traits are known from Wisconsin mounds and most of them would generally be classified as belonging to the Early Woodland period. The copper implements most frequently found with them consist of axes, awls, heavy spherical beads, and, rarely, projectile points.

What, in all probability, is shown in these gravel-pit burials and at the Reigh site is the dwindling use of copper by later groups using Old Copper burial customs and at the same time the introduction of new artifact types. Some of these new traits such as the birdstone (Brown 1909) and sandal-sole shell gorget (Baerreis, Daifuku, and Lundsted 1954) may indicate Glacial Kame cultural influences coming in from an

easterly direction and acting on the surviving Old Copper groups in eastern Wisconsin. What happened in western Wisconsin during this period is somewhat conjectural. It may be that the burial pit at the Osceola site reflects a diffusion of this idea along the Upper Mississippi valley. With the disappearance of the characteristic copper artifact types, the Old Copper complex loses it specific identity while the burial practices survive.

BAERREIS, D. A.
1953 The Airport Village Site, Dane County (Da2). **The Wisconsin Archeologist,** n. s., Vol. 34, No. 3, pp. 149-64. Milwaukee.

BAERREIS, D. A., HIROSHI DAIFUKU, & J. E. LUNSTED
1954 The Burial Complex of the Reigh Site, Winnebago County, Wisconsin. **The Wisconsin Archeologist,** n. s., Vol. 35, No. 1, pp. 1-36. Milwaukee.

BELL, R. E.
1953 The Scott Site, Le Flore County, Oklahoma. **American Antiquity,** Vol. 18, No. 4, pp. 314-31. Salt Lake City.

BELL, R. E. and D. A. BAERREIS
1951 A Survey of Oklahoma Archaeology. **Bulletin of the Texas Archaeological and Paleontological Society,** Vol. 22, pp. 7-100. Lubbock.

BENNETT, J. W.
1952 The Prehistory of the Northern Mississippi Valley. In **Archeology of Eastern United States,** edited by J. B. Griffin, pp. 108-23. University of Chicago Press.

BROWN, C. E.
1909 The Bird-Stone Ceremonials of Wisconsin. **The Wisconsin Archeologist,** Vol. 8, No. 1, pp. 5-21. Milwaukee.
1924 Indian Gravel Pit Burials in Wisconsin. **The Wisconsin Archeologist,** n. s., Vol. 3, No. 3, pp. 65-82. Milwaukee.

BYERS, D. S.
1942 Fluted Points from Wisconsin. **American Antiquity,** Vol. 7, No. 4, p. 400. Menasha.

COLE, FAY-COOPER and THORNE DEUEL
1937 **Rediscovering Illinois.** University of Chicago Press.

GRIFFIN, J. B. (Editor)
1952 **Archeology of Eastern United States.** University of Chicago Press.

HOFFMAN, B. G.
1952 Implications of Radiocarbon Datings for the Origin of the Dorset Culture. **American Antiquity,** Vol. 18, No. 2, pp. 15-17. Salt Lake City.

KIDD, K. E.
1952 Sixty Years of Ontario Archeology. In **Archeology of Eastern United States, edited by J.** B. Griffin, pp. 71-82. University of Chicago Press.

KNOBLOCK, B. W.
1939 **Banner-Stones of the North American Indian.** La Grange, Illinois.

McKERN, W. C.
1942 The First Settlers of Wisconsin. **Wisconsin Magazine of History,** Vol. 26, No. 2, pp. 153-69. Madison.

MARTIN, P. S., G. I. QUIMBY. and DONALD COLLIER
1947 **Indians Before Columbus.** University of Chicago Press.

MILES, S. W.
1951 A Revaluation of the Old Copper Industry. **American Antiquity,** Vol. 16, No. 3, pp. 240-7. Salt Lake City.

NEUMANN, G. K.
1952 Archeology and Race in the American Indian. In **Archeology in Eastern United States,** edited by J. B. Griffin, pp. 13-34. University of Chicago Press.

POPHAM, R. E. and J. N. EMERSON
1954 Manifestations of the Old Copper Industry in Ontario. **Pennsylvania Archeologist,** Vol. 24, No. 1, pp. 3-19. Honesdale.

QUIMBY, G. I.
1952 The Archeology of the Upper Great Lakes Area. In **Archeology of Eastern United States,** edited by J. B. Griffin, pp. 99-107. University of Chicago Press.

RITCHIE, W. A.
1944 The Pre-Iroquoian Occupation of New York State. **Rochester Museum of Arts and Sciences, Memoir No. 1.**
1951 Ground Slates: Eskimo or Indian? **Pennsylvania Archeologist,** Vol. 21, Nos. 3-4, pp. 46-52. Philadelphia.

RITZENTHALER, R. E.
1946 The Osceola Site, an "Old Copper" Site near Potosi, Wisconsin. **The Wisconsin Archeologist,** Vol. 27. No. 3, pp. 53-70. Milwaukee.

RITZENTHALER, R. E. and PAUL SCHOLZ
1951 Folsomoid Points in Wisconsin. **The Wisconsin Archeologist,** n. s., Vol. 32, No. 2, pp. 45-8. Milwaukee.

RITZENTHALER, R. E. and W. L. WITTRY
1952 The Oconto Site — An Old Copper Manifestation. **The Wisconsin Archeologist,** n. s., Vol. 33, No. 4, pp. 199-223. Milwaukee.

RUEPING, H. J.
1944 A Fond du Lac Gravel Pit Burial. **The Wisconsin Archeologist,** n. s., Vol. 25, No. 1, pp. 13-16. Milwaukee.

TITTERINGTON, PAUL
1950 Some Non-Pottery Sites in St. Louis Area. **Illinois State Archaeological Society (Journal),** n. s., Vol. 1, No. 1, pp. 19-31. Fairbury.

WEBB, W. S.
1946 Indian Knoll, Site Oh2, Ohio County, Kentucky. **University of Kentucky Reports in Anthropology and Archeology,** Vol. 4, No. 3, Pt. 1. Lexington.
1950 The Carlson Annis Mound, Site 5, Butler County, Kentucky. **University of Kentucky Reports in Anthropology,** Vol. 7, No. 4. Lexington.

WEBB, W. S. and D. L. DeJarnette
1942 An Archaeological Survey of Pickwick Basin in the Adjacent States of Alabama, Mississippi, and Tennessee. **Bureau of American Ethnology, Bulletin 129.** Washington.

WINCHELL, N. H. (Editor)
1911 **The Aborigines of Minnesota.** Minnesota Historical Society, St. Paul.

WINN, VETAL
1942 Ornamented Coppers of the Wisconsin Area. **The Wisconsin Archeologist,** n. s., Vol. 23, No. 3, pp. 49-85. Milwaukee.

WITTRY, W. L.
1951 A Preliminary Study of the Old Copper Complex. **The Wisconsin Archeologist,** n. s., Vol. 32, No. 1, pp. 1-18. Milwaukee.
STATE HISTORICAL SOCIETY OF WISCONSIN
Madison, Wisconsin.
PUBLIC MUSEUM OF THE CITY OF MILWAKEE
Milwaukee.

October, 1954

The new and enlarged 4th edition of Wormington's book, ANCIENT MAN IN NORTH AMERICA is now available for $3.50 thru the Denver Museum of Natural History, Denver, Colorado. It is an excellent reference work for any one interested in American archeology, and those interested particularly in Wisconsin archeology will find the OLD COPPER CULTURE included for the first time.

WANTED TO BUY . . . Usable, Indian-made birchbark canoe. Contact Mr. Alonzo Pond, 482 C Lanier Courts, Montgomery 5, Alabama.

Our campaign for NEW MEMBERS is in high gear, and we are happy to welcome the following persons into our Society:

Earl Cheeseboro, Hancock Co., Niota, Illinois.
J. A. Doerflinger, 415 Sterling Court, Madison, Wisconsin
Dr. Victor Barnow, University of Wisconsin, Milwaukee
Robert Snyder, 5418 W. Garfield Avenue, Milwaukee
Dr. K. W. Baker, Maple St., Turtle Lake, Wisconsin
J. B. Graham, 1608 Chamberlain Avenue, Chattanooga, Tennessee
Arnold Paepcke, Route 1, Muskego, Wisconsin
George Flaskerd, 4435 - 40th Ave., Minneapolis, Minnesota
Forrest C. Jones, R. D. 3, New Carlisle, Ohio
Robert Block, Route 1, Waupaca, Wisconsin
Donald J. Beer, 233 Wood St., Mansfield, Ohio

Joseph M. Ford, R. R. 5, Owensboro, Kentucky
P. G. Dickey, 6745 Ash Place, Gary, Indiana
Charles O. Forber, Jr., R. D. 3, New Castle, Pennsylvania
Gregory Perino, 4303 W. Edison, Tulsa 7, Oklahoma
Ben Thompson, Owensville, Indiana
Lloyd A. Dugstad, Box 367, Albert Lea, Minnesota
Stanley Newhall, 2126 Griffith Place W., Owensboro, Kentucky.
Roy W. Drier, 715 Pine, Calumet, Michigan
Edward Zimmerman, 102 N. Long St., Bonnie Terre, Missouri
Merlin Horn, 109 C Eagle Heights, Madison, Wisconsin
B. R. Gebhart, 634 Maple, Celina, Ohio
Paul F. Molloy, 929 Decatur St., Lincoln, Illinois
Norman L. Dunn, 1025 W. St., Findlay, Ohio
A. W. Schlering, 404 - 8th St., Huntingburg, Indiana
Gerhard B. Lee, 204-C Soils Dept., Soils Bldg., Madison, Wisconsin.
Peabody Museum, Attn.: Dr. P. Phillips, 11 Divinity Ave., Cambridge 38, Mass.
Pottowotomi Museum, Angola 3, Indiana
L. W. Howell, Glenwood, Arkansas
C. Beerntren, 2061 Blake Avenue, Racine, Wis.
Gerald Brickman, 409 Locust St., Findlay, Ohio
H. S. Bookwalter, Clarksburg, Ohio
Roger Sperka, Rte. 2, Crivitz, Wis.
George L. Beam, 409 Sedgwick St., Richmond, Indiana
Marguerite L. Litz, Route 2, Attica, Ohio
M. J. Boling, 107 Main St., Hansford, Kentucky
Ed Meiners, 219 Westwood Place, East Alton, Illinois
George P. Grove, 750 Ferguron Ave. Wood River, Illinois
Robert Aeschimann, 2313 - 14th Ave., Monroe, Wis.
Don Crouch, 3611 Monroe St., El Paso, Texas
Cynthia Merritt, 1330 N. Prospect, Milwaukee 2, Wis.
Edward Towler, 726 Neville, Green Bay, Wisconsin
Robert A. Hard, 15054 Eddy Lake Rd., Fenton, Michigan
Gerald A. Wilson, 702 Cranston Rd., Beloit, Wis.
J. M. Stark, Lamar State College, Beaumont, Texas
Bernard Crowe, 1223 - 3rd Ave., Portsmonth, Ohio

B. W. Stephens, 815 Broadway, Quincy, Ill.
Roy Latham, Orient, Long Island, New York.
MacDonald Schumm, 145 West High St., Circleville, Ohio
John F. Seymour, 3427 Middlesex Dd., Toledo 6, Ohio
C. H. Boyd, P. O. Box 273, Minocqua, Wisconsin
Keith H. Morgan, 704 S. Chestnut, Litchfield, Ill.
Grand Rapids Public Library, Ryerson Library Bldg., Michigan Room, Grand Rapids, Mich.
Robert C. Neal, Box 137, South Carrollton, Kentucky
Raymond A. Jennings, 835 N. 6th St., Quincy, Illinois
Harold K. Crawford, 3303 Sunnyside, Hannibal, Missouri
Robert Gelander, 722 River Lane, Loves Park, Ill.
Robert G. Hileman, Box 303, Anna, Illinois
Lloyd C. Ray, 709 N. Milwaukee Ave., Libertyville, Ill.
Leo Paul Davis, 905 N. Joliet St., Wilmington, Ill.
Richard K. Wagner, 328 Woodstock Ave., Glen Ellyn, Ill.
Dan A. Throop, 223 East Broadway, East St. Louis, Ill.
Paul E. Zeeb, 211 N. 3rd St., Greenville, Ill.
August J. Mier, 739 Cleveland Ave., Batavia, Ill.
Lawrence R. Qualmann, Grays Lake, Ill.
Louie R. Naugle, R F D 1, Elkhart, Ill.
Lawrence L. Smith, 53 W. Jackson Blvd., Chicago 7, Ill.
C. J. Russell, R R 4, Box 145, Noblesville, Ind.
Don Splinter, 6442 N. Sayre Ave., Chicago 31, Ill.
Don E. Lewis, R R 2, Flora, Illinois
Harold W. Mohrman, 92 Longview Dr., Longmeadow, Mass.
Dr. C. J. Maginel. Box H. Galva, Ill.
Loren Lemmon, Pellyton, Kentucky
Wayne Hannant, Chambersburg, Ill.
Don C. Miller, Waldron, Indiana
Ira B. Amos, R R 1, Bushnell, Ill.
George W. Baltzer, R R 4, Quincy, Ill.
Lester L. Fields, 53 W. Jackson Blvd., Rm. 1031, Chicago 4, Ill.
Eugene Rittenhouse, 417 E. Washington, Rushville, Ill.
Clifford Roth, 314 Center St., Gridley, Ill.
Joe Dillon, Christopher, Ill.
Donald McBeth, R R 1, Kingston, Ohio

John T. Powell, Crystal Lake, Land o' Lakes, Wis.
L. W. Noward, 11950 Walnut St., Pinckneyville, Ill.
Murray E. Wentling, 334 W. Morgan, Dixon, Ill.
Charles Dodds, 831 Curran St., Burlington, Iowa
Gerald Rilling, 720 Colonial Dr., Rockford, Ill.
Donald Gingras, 70 Front St., Danielson, Conn.
Association of Commerce, 17 S. Main St., Fond du Lac, Wis.
Dr. George J. Maloof, 19 N. Pinckney St., Madison 3, Wis.
Fred Hazelwood, 367 Stratford Dr., Lexington, Kentucky
John L. Anderson, R 2, Shobonier, Ill.
Lee D. Meadows, P. O. Box 258, Kenney, Ill.
Ralph A. Sion, 302 McKinley Rd., P. O. Box 282, Ottawa, Ill.
Ernest Helm, 1214 - 10th St., Lawrenceville, Ill.

Your Editor apologizes for the late appearance of both the September and this December issue. We have been on schedule up to this, but these two oversized issues really threw us for a loss.

Bob Ritzenthaler, Editor

THE WISCONSIN ARCHEOLOGIST

Ref

AZTALAN:

Exploration and Reconstruction

KANSAS CITY, MO.
PUBLIC LIBRARY

JUN 24 1958

WISCONSIN ARCHEOLOGICAL SOCIETY

Milwaukee, Wisconsin
Incorporated, 1903

For the purpose of advancing the study and preservation of Wisconsin Indian Antiquities.

Meets every third Monday of the month at the Finney Neighborhood Library, Sherman and North Avenue, Milwaukee. (Except during July and August.)

OFFICERS

PRESIDENT

Arthur Niehoff

VICE-PRESIDENTS

H. W. Cornell — Ellis Burcaw — Herman O. Zander
Laurence Kracht — Dr. D. A. Baerreis

DIRECTORS

Dr. R. E. Ritzenthaler — Kermit Freckman

ADVISORY COUNCIL

Frank Achen
H. S. Breitwish
Dr. E. G. Bruder
William Curkeet, Jr.
Edward Eichenberger
Kermit Freckmann
William Godfrey
Robert L. Hall
Robert Howard
Zida C. Ivey
Mrs. Theo. Koerner
W. C. McKern
Robert Menten
William Oestreich
Neil Ostberg
Louis Pierron
Allen Prill
Arthur W. Quan
J. Ringeisen, Jr.
Chandler W. Rowe
Chas. G. Schoewe
Paul Scholz
Lincoln Smith
Kirk Whaley
Dr. A. C. Whiteford
Warren Wittry

TREASURER

Martin Greenwald

SECRETARY

Phil H. Wiegand

EDITOR

Robert Ritzenthaler

MEMBERSHIP FEES

The Wisconsin Archeologist is distributed to members as part of their dues.

Life Members, $50.00 — **Endowment Members, $500.00**
Sustaining Members, $5.00 — **Annual Members, $2.00**
Institutional Members, $2.00

All communications in regard to the Wisconsin Archeological Society and contributions to the Wisconsin Archeologist should be addressed to Phil H. Wiegand, 1276 N. 63rd Ct., Wauwatosa 13, Wis. Entered as Second Class Matter at the Post Office at Lake Mills, Wisconsin under the Act of August 21, 1912. Office of Publication: 204 N. Main St., Lake Mills, Wis.

TABLE OF CONTENTS

EDITOR'S PREFACE ---------- 1

AZTALAN REVISITED: An Introduction ---------- 2
David A. Baerreis

THE AZTALAN LITHIC COMPLEX ---------- 5
Robert A. Maher & David A. Baerreis

PETROGRAPHIC ANALYSIS OF EIGHT AZTALAN CELTS 26
James W. Porter

LATE WOODLAND POTTERY IN WISCONSIN
AS SEEN FROM AZTALAN ---------- 35
David A. Baerreis and Joan E. Freeman

DOMESTIC HOUSES AT AZTALAN ---------- 62
Warren L. Wittry and David A. Baerreis

THE EXCAVATION AND RECONSTRUCTION OF
THE SOUTHWEST PYRAMIDAL MOUND AT AZTALAN 77
Robert F. Maher

A CREMATORIUM AT AZTALAN ---------- 101
Chandler W. Rowe

INTERESTING WISCONSIN SPECIMENS ---------- 111

THE COLLECTOR'S CORNER ---------- 112

THE WISCONSIN ARCHEOLOGIST

Published Quarterly by The Wisconsin Archeological Society

New Series

MILWAUKEE, WISCONSIN, MARCH, 1958

EDITOR'S PREFACE

Aztalan, the largest and most famous archeological site in Wisconsin and the northernmost outpost of the Middle Mississippi culture, has been known for over a hundred years. Its existence was reported in 1836 by Judge N. F. Hyer who mapped and described it briefly for newspaper publication in 1837. It was surveyed and described by Increase A. Lapham in his **Antiquities of Wisconsin in 1855.** The first scientific (and still the most comprehensive) excavation of the site was done in 1919, 1920, and 1932 by Dr. S. A. Barrett, and the results published as **Bulletin 13** of the Milwaukee Public Museum in 1933. No further work was done until 1949.

In 1947 the State legislature passed a joint resolution directing the acquisition of the site as a State park, and the following year saw the actual purchase of 120 acres. The Wisconsin Archeological Society and the Lake Mills-Aztalan Historical Society donated lands in their possession, and the park was opened to the public in 1952. During the summers of 1949, 1950, 1951, and 1952 archeological crews under the aegis of the Wisconsin Archeological Survey *, with funds supplied by the Wisconsin Conservation Department, further explored the site both to provide additional archeological information and to supply information and technical supervision for restoration of the two platform mounds and the stockade. The papers included in this volume are the results of these four summers of field work. The first two summers were devoted to pure archeological research, while the fol-

* An organization of the professional archeologists in the State representing the following institutions: State Historical Society, Milwaukee Public Museum, Wisconsin Conservation Department, Neville Museum of Green Bay, University of Wisconsin, Beloit College, Lawrence College, Lincoln-Tallman Museum of Janesville, and the Wisconsin Archeological Society.

lowing two concentrated on restoration. In these efforts the Wisconsin Conservation Department, in addition to funds, supplied men and machinery.

Present restoration plans call for the completion of the stockade including the plastering of the walls, the erection of several types of Indian dwellings, and the building of a museum. While much remains to be done, the groundwork has been well laid. The completion of this project will provide our State with a unique and exciting exhibit. Ancient Aztalan State Park should prove to be one of Wisconsin's chief tourist attractions as well as an impressive monument to its Indian heritage.

To the many farsighted and imaginative individuals who have contributed to the preservation, exploration, and restoration of Aztalan this volume is gratefully dedicated.

AZTALAN REVISITED: AN INTRODUCTION

David A. Baerreis

The fortified village of Aztalan, once a flourishing community on the banks of the Crawfish River, is still the scene of bustling activity. Once more the palisade is being erected and pits dug, much as they were in the past. The present activity in part grows out of the vision of members of the Wisconsin Archeological Society who early saw the need to preserve this unique Wisconsin site and moved in a positive fashion to acquire the mound group adjacent to the village. Following their lead, the village was subsequently purchased in its entirety as a park and plans developed by the Wisconsin Conservation Commission to reconstruct the village so that visitors might see a vivid picture of Indian life in the past. Recent activity at the site, therefore, in part is a phase of the reconstruction work; but it is also a continuation of the scientific archeological field work at the site. Since Aztalan is the most thoroughly studied site in Wisconsin, it may be of interest to indicate why further excavation is needed here rather than in other little known sectors of our state's prehistory. Some objectives of this research program are pre-

sented here as an introduction to a series of progress reports and as part of a brief history of the recent work at the site.

The excavations have been under the general guidance of the Wisconsin Archaeological Survey. It was following the acquisition of Aztalan by the State that plans for further work were initiated by the Survey. Clearly, the ultimate objective of a restoration of the site required additional detailed information beyond that obtained in the conventional sampling approach of the archeologist. Extensive as the early work at Aztalan had been, it did not provide all of the facts required for the preparation of a working blueprint from which reconstruction might proceed. Further, the development of the site as a park involved the construction of roads, parking areas and other facilities which might well destroy archeological features in areas that had not been tested.

The work at Aztalan in 1949 involved the cooperation of two teams. One was a summer Field School conducted by the University of Wisconsin under the direction of the present writer. Experience in excavation procedures was obtained by this group at two sites in the vicinity of Madison before they were brought to work with the permanent Survey crew of the season operating under the direction of Dr. Chandler Rowe of Lawrence College. New features found during this first season's work, including house forms not previously recorded, are described in the papers following this introduction. It was clearly indicated that much that was new and unknown still remained to be found but also a more practical objective was attained and that was the priceless relocation of the original features, such as stockade lines, so that reconstruction could then proceed in exactly the same position as the original walls. A further achievement of this season was the preparation of a kodachrome film illustrating archeological field techniques by means of the excavations at Aztalan. Much valuable public understanding of the nature and objectives of archeological research has certainly grown from the numerous public showings of this film.

Work in the 1950 season represented a continuation of the basic exploration of the site under the direction of Dr. Moreau S. Maxwell, then of Beloit College. The 1951 season

was devoted to the first phase of the reconstruction work with the rebuilding of the pyramidal mound in the southwest corner of the stockade os the objective. A small field crew, with Mr. Robert Maher, then a graduate student at the University of Wisconsin in charge, conducted excavations to determine the precise limits and size of the mound which had suffered from the effects of plowing and erosion. With this information to add to the early accounts of the structure, it was possible to rebuild it with confidence.

The fall of 1952 saw the first reconstruction of a portion of the stockade — a large task which has been continuing up to the present. Involved is a coordination of post accumulaion for building purposes, staking of locations where the posts shall be set, and finally the actual erection of the posts themselves. The visitor to the site still will not see the stockade in its original form, for the initial objective has been to rebuild the corners so that he might immediately perceive its maximum extent. The completion of the walls, a simulation of the original plastering, and the rebuilding of internal structures awaits the allocation of adequate funds. One final unit of excavation work to be mentioned is the reconstruction of the northwest pyramidal mound under the direction of Dr. Chandler Rowe during the 1954 season which also resulted in the unsuspected feature reported in this issue.

Practical needs for additional excavations have already been touched upon. Some added scientific goals should also be mentioned and some are briefly considered in the accompanying papers. More detailed information on the life of the community is clearly to be desired. How large was the village, in terms of total population? Further excavations of actual houses should help to give this information with greater precision and at the same time provide data on the range of variation in house forms. Did the mixture of Woodland and Middle Mississippi culture traditions take place at Aztalan or before the group arrived at this location? Excavation designed to clarify changes in culture patterns during the period of site occupancy will clarify this question and provide better information on the length of time the site was occupied.

Further specific questions could be given as illustrations of

what might be learned, but these are perhaps not needed. The archeological excavation of Aztalan demonstrates a common facet of all scientific work. Scientific work is never completed. Every bit of information acquired simply provides us with the means of asking additional and more important questions. The work is not being redone; new frontiers are being explored.

THE AZTALAN LITHIC COMPLEX

Robert F. Maher and David A. Baerreis

While the more recent excavations at Aztalan did not produce material which departs from the stone types described by Barrett, they did increase the sample available for study and broaden the base for a fresh interpretation of the complex. And because of the more important Middle Mississippi sites have been investigated and reported on since Barrett published his findings, it would seem reasonable that a new examination might prove profitable. With that in mind this paper will attempt to describe the artifacts of stone uncovered by the Wisconsin Archeological Survey investigations and to discuss their significance, along with that of Barrett's material, in the light of present knowledge of the Middle Mississippi and related complexes. Initially the material will be analyzed from the viewpoint of specific categories based on presumed function, and later an attempt will be made to fit it into the broader background of the life activities of the Aztalan society.

Chipped Stone

Projectile Points

Of the 58 projectile points recovered by the later series of Aztalan excavations, 43 were of the small unnotched triangular type common to Middle Mississippi Phase sites, 3 were large triangular points which were also unnotched but of a size which seemed significantly greater than the others, and 6 were smaller triangular points with either side or basal notches or a combination of the two. The remaining six points were forms ordinarily associated with complexes other

than Middle Mississippi. As Barrett pointed out (1933, p. 267) and has been indicated by other reports on Middle Mississippi sites, the small unnotched triangular point is the basic form. It should, then, deserve a detailed examination and description. With this in mind preparations for the present paper reviewed the points of that type deposited in the Milwaukee Public Museum by Barrett and combined the results of

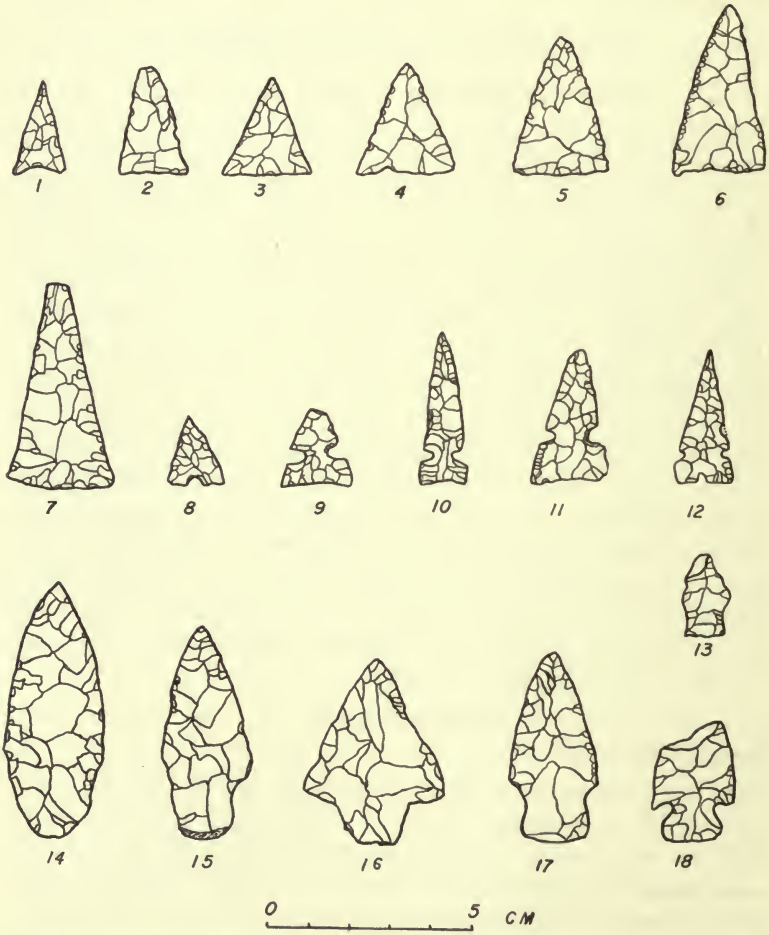


Figure I. Chipped Stone Projectile Points from Aztalan. Specimen Numbers: 1—Az866; 2—Az594: 3—Az855; 4—Az744; 5—Az741; 6—Az539; 7—Az889; 8—Az200; 9—Az243; 10—Az309; 11—Az696; 12—Az551; 13—Az553; 14—Az230; 15—Az127; 16—Az699; Az516.

that inquiry with the evidence by the excavations of the Wisconsin Archeological Survey in an effort to make a specific definition of the qualities of this important type.

In form this typical point (Figure I: 1-7) ranges from a crude to a severely correct triangle, ordinarily presenting a greater dimension along a line from the center of the base to the apex than along the base itself, although some of the smaller points are equilateral in their proportions. This latter condition, however, would seem to be due to a concession to the structural properties of the material and the function of the tool rather than to any conscious striving toward an equal-sided point. The ease of penetration a point possesses depends in part upon its sharpness, and in a triangular form this quality is developed to some extent, particularly when the material is stone, through decreasing the angle at the apex, a condition which can be obtained only through increasing the length of the sides relative to that of the base. The extent, however, to which this process can be carried, if one wants a point which is thin and light as was apparently the desire of the Aztalan artisans, is limited by the cleavage qualities of chert and quartzite. If the triangular point is to successfully resist the force turned upon it by its own penetration of the target, it must not be reduced below some minimal width. Precisely what that minimum would be in any given point would probably be a function of the weight and length of the point, the quality of the stone, and the power of impact. It would seem significant that most of the incomplete Aztalan points examined had been broken widthwise rather than down their length. Apparently the range of variation of the width of the point is controlled in its upper limits, to some extent at least, by the need to maintain an effectively small angle at the apex, and in its lower limits by requirements of structural strength. From these considerations it would seem probable that the width values of the Aztalan triangular point would show less variance than would those of the length, a condition which investigation verifies. A statistically derived statement of variance for length is 37.63, while that for width is 12.73. The coefficient of variation is 23.87 for length and 18.98 for width. The mean

proportion of width to length in the Aztalan series is .75, and since, as has been shown, width is less variable, the shorter points tend toward a somewhat higher figure and the longer toward a lower.

Bases are predominantly straight, with concavity being the only major variation. A few are convex, but due to poor workmanship rather than to intention. Combining Barrett's observations (1933, p. 266) with those which could be made on the material excavated by the survey, one finds that of 341 points for which this trait is recorded, 309 were straight at the base, while 32 were concave. Sides also tend to be straight, with small serrations probably the only intentional variation. Only six specimens were observed, however, in which the serrations appeared to have been purposely produced.

As far as material is concerned it would seem that some conflict is present between the present paper's observations and those reported by Barrett. In his 1933 publication, of 305 triangular unnotched points considered for this quality, 170 (55.7%) were of quartzite, 117 (38.4%) of chert, and 18 (5.9%) of quartz. This would seem to indicate a marked preference for quartzite as a material for the triangular point. An examination, however, of those small unnotched triangular points from Aztalan which are deposited at the Milwaukee Public Museum and of those excavated by the Survey indicates a somewhat different situation.

TABLE I

	Quartz		Quartzite		Chert		Total
	No.	%	No.	%	No.	%	
Milwaukee Museum	2	1.0	85	43.8	107	55.2	194
Survey	0	0.0	6	14.0	37	86.0	43
Total	2	0.8	91	38.4	144	60.8	237

What the meaning of this apparent contradiction is would be difficult to say. Presumably the Milwaukee Museum points listed above were a part of Barrett's sample also. It may be that the bulk of the points in other collections examined and included in his report were of quartzite. But although possible it would seem improbable that of the 111 additional points only ten were of chert. Rather, while admitting the possibility

of other interpretations, it is the present authors' inclination to accept their own observations as a more nearly correct reflection of the situation as it actually existed, crediting chert as the most often used material in the manufacture of the small unnotched Aztalan triangular point. But both reports are clear on the fact that quartzite, whether predominate or not, was employed for point material with a greater frequency by the Aztalan people than it was by at least most Woodland people of the area.

It would probably be correct to say that there is a general impression within the field of American archeology that the Middle Mississippi triangular point is a product of finely controlled stone workmanship. In part this is true, because some of the points are excellently made, but the use of these as representative illustrations of the type tends to conceal the fact that a considerable range in quality does exist. This, at least, is the case at Aztalan. While it would seem rather probable that the better made points achieve more nearly the form that was intended by the maker, it must be recognized that most were not successful in this. The points available for the present investigation were broken down into three categories referrent to the quality of workmanship which each displayed. One category included those points which were well shaped and exhibited a well executed flaking. A second category included points which were only fairly well formed and which had a limited amount of secondary work. The last group was made up of points which showed little or no secondary flaking and which in almost all cases presented one side as a single, unmodified flake scar. Designating the first category as good, the second as fair, and the third as poor, the following distribution was obtained:

TABLE II

	Good		Fair		Poor		Total
	No.	%	No.	%	No.	%	
Milwaukee Museum	52	26.8	112	57.7	30	15.5	194
Survey	17	39.5	16	37.2	10	23.3	43
Total	69	29.1	128	54.0	40	16.9	237

The categories, as employed above, are only a rather rough device intended as an aid in presenting some information

about the range of variation in workmanship quality exhibited by the Aztalan triangular point. They are not, of course, to be interpreted as indicating that the range consists of three distinct divisions discretely separate from one another. If more accurate means of measuring workmanship quality were available and were employed, the results would probably fall into something very like a normal curve. The above table, however, should show that the Aztalan stoneworkers varied considerably in the quality of their point products, and that although those points which achieve the "good" category may most closely represent the mental construct which the worker was attempting to reproduce in stone, those which fall into the "fair" are more typical of what was actually accomplished.

Although the foregoing description has been detailed, it is the authors' belief that more yet can be profitably included in the analysis of even so simple a trait as a triangular projectile point. No condition can be more evident to the archeologist than the limited nature of the data with which he must deal. Restricted to the remains of material artifacts and their associations, that cultural evidence recovered by immediate field techniques is often small in quantity and never large in range when considered against the trait content of even the simplest cultures. It is this condition, special to archeology among those disciplines interested in socio-cultural phenomena, which requires that the archeologist place heavy emphasis upon the development and use of techniques of analysis which may validly aid in drawing all possible cultural information from his small core of data.

Baerreis and Hornseth (1948) have pointed out that measurement, while included by convention in all archeological descriptions, has seldom been employed in attempts to find cultural standards which might be useful in the analysis of a particular culture and in comparative studies. Their work with the quantifiable aspects of projectile points from certain Oklahoma components outlined the direction pursued by the following analysis of the physical proportions of Mississippi Pattern points. An object of both studies was to test whether or not any aspects of the culturally directed construct in the

minds of the workers responsible for the artifact type might be quantifiably expressed and statistically analyzed.

In addition to the Aztalan material already discussed, the raw data upon which the following analysis is based consists of the length and breadth measurements of the items in five other series of triangular points from as many sites of Upper Mississippi cultural connections. Four of these sites, Midway Village, White Camp Site II, Walker-Hooper Village and Carcajou Point are manifestation of the Oneota Aspect of the Upper Mississippi Phase. McKern (1945) has classified Midway and White as components of the Orr Focu and Walker-Hooper as a representative of the related Grand River Focus. Carcajou Point may yet be another distinct focus, but certainly is Oneota in its aspect classification. The remaining site whose projectile points are concerned in this study is Lasley's Point, a Winnebago County site excavated by A. P. Kannenberg but unreported. Much of the material from these excavations is similar to that found in Oneota manifestations, while, on the other hand, traits anomalous to that complex, such as stone structured mounds and painted pottery were also present. Lacking an analysis of the Lasley's Point material, the site's cultural affinities cannot be more specifically defined here than to say it is probably Upper Mississippian in its basic nature. All of the sites are in Wisconsin.

The base width and the length from point to base of all measurable points of the triangular type which were available from these sites were recorded. These figures were then subjected to a simple analysis of variance, a statistical technique which offers an over-all test for the significance of the differences between several means considered at the same time. The method produces a variance ratio, which is obtained by considering both the variation of values about group means and the variation of group means about the total mean. In other words, the former concerns variation within groups, and the latter attends to variation between groups, while the variance ratio relates the two. If the estimate of variance

between groups is significantly larger than within groups, the former must be regarded as an estimate of the same variance as the latter plus variation due to real, nonchance differences between groups.

TABLE III

Site	Total Measureable Points	Mean Width	Mean Length
Aztalan	200	18.75mm	25.82mm
Lasley's Point	241	16.92	23.70
Carcajou	28	15.64	24.61
White	48	15.40	23.06
Midway	65	15.37	22.15
Walker-Hooper	136	15.15	21.44

The proportion of points made of quartzite or quartz as opposed to chert was approximately the same for each series, indicating that any influence which material might have on the point measurements was controlled for the purposes of this analysis.

An analysis of variance was then applied to the groups in different combinations, producing the variance ratios recorded in Table IV.

The group combinations tested were set up with an eye to finding whether differences or similarities between particular cultural complexes were also reflected in projectile point proportions. The figures in Table IV should be clear. All group combinations tested, which included one or more sites not definitely classifiable as the Oneota Aspect, showed significant difference in both the length and width of their projectile points. considered in terms of the classificatory connections of the sites included in this study, the above variance ratios based only on projectile point dimensions can be seen to closely reflect the decreasing inclusiveness of the classificatory categories concerned with the complete complex.

TABLE IV

Group Combinations	Variance Ratio Length	Variance Ratio Width
All Groups	11.75***	34.37***
Midway, White, Carcajou, Walker-Hooper, and Aztalan	10.31***	35.39***
Midway, White, Carcajou, Walker-Hooper, and Lasley's Point	6.16***	14.30***
Midway, White, Carcajou, and Walker-Hooper	3.52*	.30
Midway, White, Walker-Hooper	1.88	.22
Midway, White, Carcajou	2.49	.17
Midway, White	.77	.03
Midway, White, Lasley's Point	3.38*	19.83***
Midway, White, Aztalan	13.58***	36.96***
Aztalan, Lasley's Point	16.65***	41.82***

*** difference significant at the .001 level
** difference significant at the .01 level
* difference significant at the .05 level

TABLE V

Cultural Classification	Variance Ratio Length	Variance Ratio Width
Mississippi Pattern (Includes all six groups)	11.75***	34.37***
Upper Mississippi Phase (Midway, White, Walker-Hooper, Carcajou, and Lasley's Point)	6.16***	14.30***
Oneota Aspect (Midway, White, Walker-Hooper, and Carcajou)	3.52*	.30
Orr Focus (Midway, White)	.77	.03

*** difference significant at the .001 level
* difference significant at the .05 level

In other words, likeness between the proportions of projectile points of the six sites considered varies directly with likeness between what is known of the total complexes of those sites. While the points of all the sites examined were triangular in form, Oneota artisans held in common a similar idea of point dimensions which differed from that found in the Lasley's Point and Aztalan complexes, and these in turn differed from one another, with the Aztalan point maker showing a significant preference for a wider and longer point than did any of the other groups investigated.

Measurement analysis intended to throw light on cultural phenomena need not be limited to projectile points nor to the technique applied here. Many traits encountered by the

archeologist may yield new information when their measurable aspect are properly approached. The "fallacy of misplaced concreteness" is, of course, an ever present danger in investigations of this sort. The analyst must consider closely whether or not the measurement in which he is interested represents phenomena which are actually cultural in nature. The probability of this may be investigated by attempting to control possible non-cultural influences and by examining, as has been done here, the behavior of the measurement in a cultural sphere. Certainly measurement and its analysis should be of descriptive importance to the archeologist, and wisely employed it could be useful in cultural comparisons and the analysis of particular complexes.

Notched Triangular Points

Although it is not the basic form, the notched triangular point (Figure I: 8-12) has often been considered as significantly characteristic of the Middle Mississippi stone complex, in some areas at least. This view very properly rests to a great extent on the fact that the notched triangular represents one of the relatively few readily observable differences in treatment of form that distinguish between the Upper and the Middle Mississippi stone complexes — complexes which, in Wisconsin at least, are highly similar in many of their traits. While this paper has already shown that the apparently identical Upper and Middle Mississippi unnotched triangular points can be distinguished through statistically significant differences in proportions, the importance of the Middle Mississippi notched triangular remains as a feature of distinction between the two complexes. But it should by no means be considered the typical Aztalan point. Combining Barrett's sample with that of the Survey, an impression may be obtained of the frequency of the notched triangular relative to that of the unnotched.

TABLE VI

Sample	Notched	Unnotched	Total
Barrett	54 (14.9%)	308 (85.1%)	362
Survey	6 (12.2%)	43 (87.8%)	49
Total	60 (14.6%)	351 (85.4%)	411

With a frequency of nearly six times that of the notched points, the unnotched triangular is obviously the typical product of the Aztalan stone industry. The notched point is

probably best regarded as a variation on the basic triangular form which was sought often enough by the Aztalan stone worker to become standardized, but which did not occur, or at any rate did not occur favorably to the Oneota point maker.

Several varieties can be seen among the notched triangular points. The most common is a point with a single notch on each side, somewhat nearer the base than the point. Of the combined sample of 60 notched points, 48 were of this single pair side-notched variety, 5 had an additional notch in the base, 2 had extra notches on the sides, and 4 were notched obliquely on the sides. While the Survey excavations contributed specimens to only the first two varieties of this combined sample, they did produce a single point which might represent an additional variety of the notched triangular, although there must be some doubt as to whether the form was intentional. The specimen concerned is a small triangular point with a single notch in the center of the base but with none on the sides (Figure I: 8). The notch, however, is crude and may have been accidentally rather than purposefully made.

In his 1933 report Barrett remarked that all of his notched triangular points were of chert. Significantly, all discovered by the Survey investigations were also of this material.

Large Triangular Points

The survey work produced three triangular points whose large size cautioned against inclusion in any of the previously discussed categories. Separations of types on the basis of size nearly always possess something of the arbitrary and are consequently difficult to defend. Consideration of the three points at hand is further complicated by the fact that two of them are incomplete. A single specimen which has only a small portion of the tip missing (Figure I: 7) is 50mm. in length, while the other two were undoubtedly larger than this in their original form. It is possible that these represent the upper limits of the unnotched triangular point range, but the presence of a distinct size gap between these and the next largest triangular point indicates that a distinction should probably be made. Barrett was apparently of a similar opinion and separated a group of larger points from his sam-

ple of triangulars. Some of these, he felt, might have been knives or lance points. This interpretation would seem to be as good today as it was then.

Other Projectile Points

The six remaining points which were recovered by the Survey excavations are varied in form (Figure I: 13-18) and ordinarily associated with Woodland or other non-Mississippian complexes. One approaches the form of a symmetrical lanceolate point (Figure I: 14) but would appear to be actually a contracting stem point with a convex base that has an extremely weak development in the shoulder area. Its length measurement is 64 mm., its width 26 mm., and the thickness 9 mm. Two additional contracting stem points have more pronounced shoulder areas (Figure I: 15-16). The first of these (Figure I: 15) is of particular interest since the rounded base is smooth, revealing the water-worn cortex of a chert nodule which had not been subsequently retouched and removed. An insight is thus provided as to the source from which some of the raw material was obtained — quite possibly glacial gravel deposits. The dimensions of this projectile point are: length — 52 mm.; maximum width — 22 mm.; maximum thickness — 8 mm. The second projectile point possessing a distinct shoulder (Figure I: 16), like the preceding point has been largely shaped by percussion flaking. Its dimensions are: length — 45 mm.; width — 34 mm., thickness — 8 mm. One large projectile point has a slightly flared stem (Figure I: 17). Extensive pressure retouching has produced a symmetrical form with the following dimmensions: length — 47 mm.: width — 22 mm.; thickness — 11 mm. A small projectile point (Figure I: 13) has similar shape characteristics to the preceding point but is doubtless a typologically distinct form. Since the tip is broken its original length can not be ascertained, but it is 12 mm. wide and 5 mm. thick. The last of these odd forms is a corner notched specimen (Figure I: 18) also with much of its tip broken away. Like the point approaching a lanceolate form, its workmanship is relatively good and shows some fine pressure flaking. This point is 20 mm. wide and 5 mm. thick.

It is possible, of course, that these six points, along with the other non-triangular forms illustrated by Barrett, are as

much a part of the Aztalan Middle Mississippi stone complex as are the triangular types, but it would seem more proper to regard them as intrusive. They are proportionately few in number and show considerable variability in form — conditions which might be expected if the points were obtained through relatively casual contact with different bands of wandering Woodland peoples or through trade contacts with other groups. Larger projectile points do occur at other Middle Mississippi sites. At the Kincaid site in Illinois, it is stated that while the "typical" Middle Mississippi points are much the most common, others generally considered Woodland occur in sufficient numbers to suggest that they belong to the complex even though re-used (Cole, et. al., 1951: 121). This situation appears to also hold true in Middle Mississippi sites in Kentucky (Webb and Funkhouser, 1931; Webb, 1952). The absence of data on frequency and the lack of an adequate comparative survey, however, makes this situation difficult to appraise.

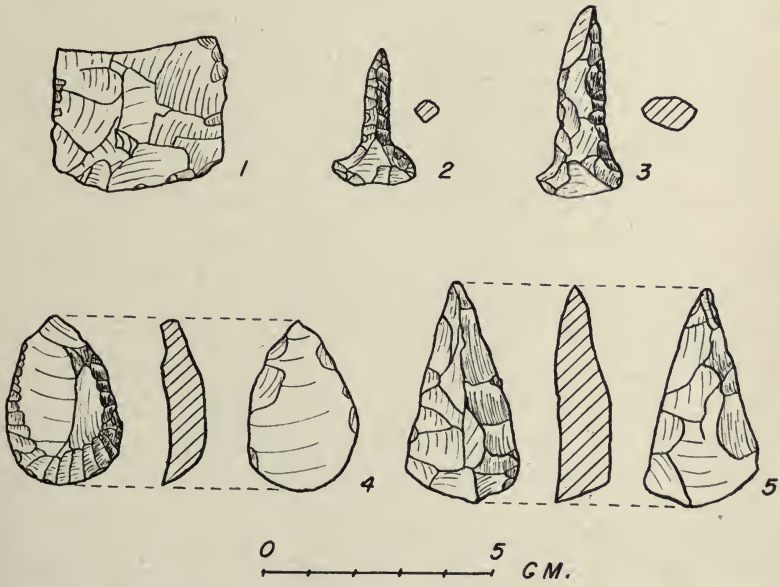


Figure II. Chipped Stone Knife (1), Drills (2-3) and End Scrapers (4-5) From Aztalan. Specimen Numbers: 1—Az467; 2—Az429; 3—Az202; 4—Az725; 5—Az243.

Knives

In addition to the three large triangular points which may have been knives, the Survey excavations produced four fragmentary blades which might be best regarded as knives. One specimen is 82 mm. long and 53 mm. wide but represents only the tip of its original form. It may have once been similar to the blades pictures in Barrett 1933, Figures 59-60. Two additional fragments of the pointed tips of blades, like the preceding specimen, are manufactured of quartzite. The remaining specimen (Figure II: 1) is manufactured from chert, and constitutes the basal section of a more nearly straight-sided knife though with a convex base. It is 39 mm. wide and 11 mm. thick.

Drills

From Barrett's illustrations it would appear that drills at Aztalan included three main shape categories: (1) a relatively straight-sided or needle-like form; (2) a "T-shaped" variety with a sharp expansion in width at the base; and (3) a form produced by retouching the blade of a projectile point. Since the latter form is produced from projectile points of the large stemmed variety previously discussed, a similar problem arises in regard to their inclusion as part of the Middle Mississippi complex. Only two drills were recovered by the Survey investigations, both being of the second or "T-shaped" variety (Figure II: 2-3). Only one specimen is intact (length — 30 mm.; width — 18 mm.; thickness — 5 mm.); in the other, a larger specimen, the shaft of the drill is broken. Both drills are manufactured from chert.

Scrapers

Aztalan scrapers appear to be varied in form and have not been described in detail in the earlier report. The "bunts" mentioned by Barrett are doubtless in most instances stemmed scrapers. One finely retouched end scraper is illustrated in Barrett 1933, Plate 51, fig. 5 and also classed as a "bunt." The Survey excavations produced six scrapers, only two of which showed anything resembling careful retouching. Both of these were end scrapers. The other four specimens were simply thin flakes which had received a minimum of retouching in order to produce a working edge, principally along

one side. These may have been cutting as well as scraping implements.

The two implements clearly classifiable as scrapers are typologically distinct. One specimen (Fig. II: 4) manufactured from a white chert is plano-convex in section. The ventral surface (opposite the scraping edge) is formed by a single flake scar although a few flakes have been removed from the edges. The flake was originally detached from a core at some point near the butt end but the striking platform and the bulb of percussion has been removed by trimming flakes that produced a roughly pointed butt end in the finished implement. On the dorsal surface a slight keel is present which is formed by two primary flakes. The scraping edge is rounded by delicate pressure retouching and both sides are also retouched to shape the scraper. The implement is 37 mm. in length, 25 mm. in width and 7 mm. in thickness. The second scraper (Figure II: 5) is bi-convex in section, both faces having been formed by percussion flaking. The implement tapers gradually to a pointed butt end and the scraping edge is formed by bold percussion flaking. The lack of pressure retouching at the working end raises a question as to whether the implement was actually finished and used. Both scrapers have been described in detail since it is possible that careful typological study of such implements may demonstrate their value in comparative studies.

Pecked and Ground Stone Artifacts

Celts

The ground stone celt is a tool apparently typical of both Upper and Middle Mississippi complexes and occurs in quantity at Aztalan. Barrett mentions 41 specimens and the later Survey excavations discovered an additional eight. Some taper to a rather small poll, while others are relatively parallel-sided. Only one of these is complete, measuring 141 mm. in length and 48 mm. in width at the poll and 67 mm. at the bit. Barrett's sample has a length range from 58 mm. to 181 mm. An analysis of the raw materials used in their manufacture is to be found in the accompanying paper by James S. Porter.

Although the Survey excavations found none, the 1933 re-

port mentions grooved axes as relatively numerous at Aztalan. This situation raises problems similar to those of the Woodland-like projectile points, and it probably should be interpreted in the same manner. Other Middle Mississippi sites indicate that the celt is the more typical chopping instrument of the complex, and it is suggested here that the celt but not the axe is a part of the native Aztalan complex. It must be remembered that the Aztalan settlement was isolated from the main area of the Middle Mississippi culture distribution, and as a consequence of the necessities of that situation it may be expected to have carried on more frequent trade re-

Figude III. Chipped Stone Celt (1—Az740) and Ground Stone "Cup" (2—Az634) From Aztalan. (Natural size.)

lations with the surrounding Woodland peoples than it otherwise might. This would seem to offer a basis of explanation for the occurence of Woodland traits side by side with those of the Middle Mississippi complex. Both types are fully developed and clearly formed. Neither shows examples of crude experimenting that might be expected if one tradition was making initial attempts at manufacturing forms which contact with the other had suggested. And since other elements at the site, such as temple mounds, point clearly to the essential Middle Mississippi nature of the complex, it seems reasonable that such items as the grooved axes were manufactured by Woodland peoples and later obtained by the Aztalan settlers, probably through trade.

A somewhat unusual specimen recovered by the Survey was a piece of basalt which had been shaped into a rough celt or axe form through what appears primarily to have been percussion flaking techniques (Figure III: 1). It may be that this artifact represents a celt in the process of manufacture, but, whatever the case, it seems designed for a chopping function.

Abraders

The Survey excavations produced five sandstone abraders, a trait which is also mentioned by Barrett. As is common with these pieces, their form is irregular with worn grooves being the distinguishing marks. Apparently these implements were used to grind edges on points of various small tools and weapons. Barrett (1933, p. 281) suggests that one function might have been to sharpen points on bone awls and antler implements. While it does not seem probable that any of the Survey specimens served as a part of an arrow shaft straightener, Barrett does record this trait for the site.

Stone Cup

A sandstone artifact worked into the general shape of a cup was found by the more recent excavations (Figure III: 2). Precisely what function it may have served, however, is a matter of doubt. The cup itself, measures 45 mm. in width and 32 mm. in depth, with a conical depression drilled into one face. The depression is 28 mm. across at its mouth and tapers to a point at its greatest depth, a measure of 25 mm. The face into which the depression was drilled is flat, while

the one opposite is curved, the overall shape being very roughly hemispherical. An examination of the specimen brings two possible functions to mind. One possibility is that it was used as a paint cup. Both Barrett's and the Survey's investigations found hematite fragments which probably served as raw materials for paint. But no paint stains could be detected within the cup. Another possibility is that it served to hold the butt end of the drill piece of a bow drill. The curved body could have been held easily in the human palm, while the opposite depression would have readily allowed rotary movement to the drill while holding it securely in place above the object to be drilled. These interpretations, of course, must be considered speculative, but in terms of the known functions of similar objects either view may be considered as among those most probable.

Ear Spool

The Survey excavations added one stone ear spool to the eight already recorded by Barrett. The new one is similar to the others in that it consists of two discs connected by a perforated stem. What is assumed to be the outer disc is the larger, measuring 19 mm. in diameter, while the inner and smaller disc is 15 mm. The thickness from the outside disc to the inner is 12 mm. and the diameter of the perforation is 5 mm. Compared to the others the new ear spool is toward the smaller end of the size range. As in the case of all of Barrett's specimens, the material used is apparently steatite. Two of those described by Barrett were at least partially covered by copper.

Other Stone Artifacts

Barrett discusses a number of artifacts, some of flint and others of chert, which he indentifies as spades. The Survey excavations found no objects of either of those materials which were in a similar form. But they did uncover a tool of what appears to be basalt, which may have served a similar function, although it is considerably smaller than most of Barrett's specimens. This is a flat, roughly chipped slab 139 mm. long and 65 mm. wide. While it is possible that it might have been used as a hoe, the Aztalan evidence indicates that shell by all odds was the preferred material for that tool. Certainly considerable excavation must have been involved

in the extensive stockade and mound building activities, and it is reasonable to expect that those artifacts which could have served as shovels very likely did.

One example of what Barrett refers to as "pecking stones" was found by the Survey excavations. This was a roughly egg-shaped water-worn pebble with a long diameter of 74 mm. and a short diameter of 55 mm. The smaller end has been pitted through use. Also added to the Aztalan collection was a large grinding or milling stone. The specimen is a fragment, representing about one half of the original complete artifact. Fortunately the break was down the center and a mental reconstruction is not difficult. The specimen was large, measuring 223 mm. along its complete diameter and presenting evidence of grinding in depressions on both sides.

A final and problematical specimen is an irregular fragment of limestone. One end is broken off, while the other shows evidence of battering similar to that found in pecking or hammer stones. Since there are no other indications of shaping or of other use, it is possible that the piece was used as a crude hammer implement. The softness of the material, however, would have prevented it from being used in pecking out the harder celts or axes.

Conclusion

To the people of Aztalan, stone was an important material. Their culture, in terms of its place and its time, was an impressive one, and many of its successes, and its limitations as well, are closely connected with the measure of effectiveness with which they could meet their environment with tools made from stone. Despite the presence of a few objects of copper, the Aztalan people do not seem to have had any real practical knowledge of how to work or use metals, and they lived at a time in Wisconsin when whatever surrounding tribes might once have had it had lost it to the past. With a developed culture which required many activities involving cutting, chopping, drilling, scraping, pounding and grinding, they depended heavily on tools made from stone to perform these activities, and, using a variety of techniques from percussion flaking to polishing, they made these tools in forms

characteristic of many of the cultures within the broad Mississippi Pattern.

Although their economy was probably based on farming it was still a mixed one, and hunting, fishing and gathering were important. Large stones were used to grind the corn and probably other seeds as well, while arrows tipped with triangular points and spears and knives with lanceolate shaped blades were used to bring down game, whose skins were prepared with stone scrapers. Deer bones are plentiful at the site, and the remains of one of the cannibalized humans were found still associated with a finely made triangular projectile point which had passed through the right temple and imbedded itself in the palate. This apparent tendency to regard other human beings as potential food must have deeply involved the Aztalan people in activities of war. Here these weapons could be used in defense behind stockades of logs cut by stone celts and sunk in holes and trenches dug by stone bladed shovels, the same tools which could have been used in constructing their houses. Dirt to build the temple mounds which dominate the site was probably dug with the stone shovels, which may also have been used to excavate the large storage pits found in the platform of the southwest pyramid.

In addition to being used for these practical activities, stone was also made into ornamental pendants and earspools, and when rich in ferrous oxides it was probably used to provide body paints. Apparently games involving stone objects may also have been played, and a discoidal found by Barrett (1933, p. 277) is of the "chunkey stone" type.

Although the Aztalan people apparently fought with their neighbors and ate at least some of them, since the evidence at Aztalan indicates the presence of a gastronomic satisfaction not ordinarily associated with endocannibalism, they also appear to have traded with them. The complete nature of this trade cannot be reconstructed, but it seems relatively clear that finished tools of stone were among the items exchanged. These, mainly of Woodland types, were received by the Aztalan villagers, but what they gave in exchange cannot be seen in the present evidence. Since they had a way of life which would seem to have been more sedentary and fields

which were perhaps more productive, it is possible that the Aztalan native's end of the bargain was comprised in part at least of corn or other agricultural products. This same sedantariness, coupled with a relatively hostile countryside, would seem reasonably to have made journeys to native quarries more inconvenient ventures than they would have been to the more mobile Woodland peoples. But whatever the case may have been, it appears most likely that a part of the stone complex found at the site should be accounted Woodland in origin, although the association of these artifacts in pits and other features with objects of undoubted Mississippi design indicates that they were last used by the Aztalan natives. These artifacts which this paper considers to be trade goods include such things as the non-triangular projectile points, the grooved axes, the bannerstones reported by Barrett, and perhaps some of the pipes, particularly the one of platform type (Barrett, 1933, pp. 282-283). It must be conceded, however, that the possibility of an earlier Woodland occupation in the broad site area does exist. Some of these artifacts, then, might be derived from an earlier occupation rather than constituting trade goods.

It is hoped that from the preceding pages some picture emerges of an important segment of the Aztalan culture — a stone complex whose production and use entered fundamentally into many of the activities of the Aztalan people, and whose content, although modified by trade, clearly connects it with a more southern history and with the broader Middle Mississippi tradition.

BIBLIOGRAPHY

BAERREIS, DAVID A., and R. A. HORNSETH
Measurement in Projectile Point Description: A Preliminary Statement, News Letter, Plans Archeological Conference I, No. 4, pp. 13-15.

BARRETT, S. A.
Ancient Aztalan, Bulletin of the Public Museum of the City of Milwaukee, Vol. XIII, 1933.

COLE, FAY-COOPER
Kincaid: A Prehistoric Illinois Metropolis, Chicago, 1951.

McKERN, W. C.,
Preliminary Report on the Upper Mississippi Phase in Wisconsin, Bulletin of the Public Museum of the City of Milwaukee, Vol. 16, 1945.

WEBB, WM. S.
The Jonathan Creek Village: Site 4, Marshall County, Kentucky,

The University of Kentucky, Reports on Anthropology, Volume VIII, No. 1, 1952.

WEBB, W. S. and W. D. FUNKHOUSER
The Tolu Site in Crittenden County, Kentucky, The University of Kentucky, Reports in Archaeology and Anthropology, Volume I, Number 5, 1931.

PETROGRAPHIC ANALYSIS OF EIGHT AZTALAN CELTS

James W. Porter

This part is concerned with the petrographic analysis of eight celts recovered during the course of the recent excavations at Aztalan by the Wisconsin Archeology Survey. Professor David A. Baerreis, University of Wisconsin, provided the celts and suggested the problem.

In the primary study of Aztalan, that of Dr. S. A. Barrett, in which a very substantial number of stone axes and celts are described, the types of material are determined by means of a megascopic analysis based upon color and texture. The megascopic approach has the disadvantage of lacking the details which are necessary if one is to compare rock types and determine their ultimate source. This latter objective, the determination of source material, is of fundamental importance to archeological research. With it rests the possibility of reconstructing to some extent the nature of the patterns of trade and commerce that existed among the prehistoric Indian communities. In England such a geological approach has produced excellent results, due to the cooperation of collectors, geologists, and archeologists (see, for example, Keiler, Piggott and Wallis, 1941; and Stone and Wallis, 1947 and 1951). These reports illustrate the kind of results possible when petrological analysis is oriented toward an archeological problem.

Geology of the Aztalan Area

The site of Aztalan is located in the glacial drift of the Wisconsin glaciation. As a source of raw material, the glacial drift would contain diverse types of rocks and minerals that could be utilized by the Indians. During Pleistocene times, the southeastern part of Wisconsin was an area where retreats and advances of the glaciers greatly altered the

Pre-Pleistocene topography. For a complete history of this area from the glacial viewpoint, U. S. G. S. Professional Paper No. 106 by W. C. Alden may be consulted. For this paper it is necessary only to impress the reader with the uncertainty that confronts the investigator when he deals with an area containing rock and mineral types that could well have been mixed and carried from original sources as far away as Canada.

The direction of movement of the glacier was generally from the north to the south in the Aztalan area (Alden, 1918, Plate IV). A detailed lithology of the rocks in the glacial debris would be of interest, but little has been done along this line. Alden presents the results of an analysis of some 20 drumlins in Jefferson and Dane Counties. He found that 88% of the material was "local" and 11.4% consisted of "foreign crystallines" (Alden, 1918, p. 253). Of another area, Alden says, ". . . an average of 86.98 per cent of these pebbles were from the rock formations underlying the area under investigation. Only 13.2 percent were regarded as of foreign derivation, and these were almost all pebbles of the crystalline rocks of Canada, principally granite, diorite, gneiss, various schists, some basalts, greenstones, quartz porphyries, and quartzites. Nuggets of copper from the Lake Superior region and one diamond from an unknown Canadian source were among the least common constituents found . . ." (Alden, 1918, p. 220). This is as detailed as any geological report will normally go when attempting to trace original outcrops for some erratic. It should be noted that one need not go to Canada to find granite, diorite, greenstones, and others previously mentioned.

Because we are concerned with the origin of the materials in the glacial drift, it is also necessary to look briefly at the possible types that do occur in northern Wisconsin and Upper Michigan. Many reports have been published on the area. Although old, one very good general survey can be found in **Geology of Wisconsin,** Volume III, with particular emphasis on Parts I, II, and VII. Also of interest is Weidman, 1907. In looking through this array of literature, the reader will find numerous references to rock types such as diorite, gabbro,

diabase, and greenstone. From these reports, it would seem as if there are hundreds of basic rock types and that each differs just enough to be identified. Yet in reality there may be no differences between cetrain groups of outcrops. There will have to be much more work in this line before we are able to match the splendid work that has been done in England with the same problem.

Methodology

We shall discuss here the manner in which the archeological material submitted for study was analyzed. It is hoped that the reader will thus appreciate the limitations and advantages of this method as they may be applied in later work of this nature. Much that follows can be reviewed in textbooks on petrographic technique.

Thin sections were made of the eight celts. This was accomplished through the cooperation of Dr. E. N. Cameron, Chairman of the Department of Geology at the University of Wisconsin. His understanding of the problem and desire to lend support made it possible to utilize the facilities of the thin section room maintained for the Department of Geology. For each celt only one section was made, due to the shortage of time, but had more time been available it would have been possible to produce at least two or three from each celt.

A thin slab was cut on the diamond saw after an initial cut had been made to remove the rounded or jagged edges. This was done to insure that a typical cross-section would be obtained from one center of the celt. The slab cut was approximately 4mm. thick. One side was then ground on a grinding wheel, using a coarse grinding powder and water to remove the saw marks. This side was then cemented to a glass slide with a cementing agent known as "Lakeside". This was heated to a temperature of approximately 110° C. in order to make it pliable enough to be handled. This slide was allowed to cool and then mounted in a special bracket and again put under the diamond saw. This cutting trimmed the specimen's thickness to about 1 mm. Following this, the specimen was ground on a grinding wheel using a coarse abrasive and water until the colored minerals became trans-

lucent. The final grinding was done with a finer grinding compound, in order to reduce the thickness to approximately .03mm. The thickness was determined by repeated observations under the polarized microscope using the maximum interference colors of minerals of known birefringence. After the thickness was correct, the slide was washed and a glass cover slip mounted using Canada Balsam. To use the Canada Balsam the slide was heated to approximately 70° C. in order to make the balsam plastic and yet not disturb the Lakeside already used. After pressing the air bubbles out of the balsam from beneath the cover slide, the slide was cooled and ready to be viewed under the microscope.

The methods used to identify the mineral constituents of the rock are those followed by petrologists in general. Under the microscope, numerous distinguishing features are easily seen that will definitely identify most of the minerals. In the case of more difficult determinations, increased magnification and certain unique optical properties are employed to make the final decision as to the proper name to be assigned. The accepted rock classifications make use of rather common minerals that are normally easy to identify under low magnification. This then means that the more difficult determinations usually lie in the realm of accessory minerals, which may not appreciably change the rock's classification.

For this analysis each thin section was viewed to determine texture, mineral constituents, and relative percentages of each. The results are tabulated in the next section.

Results of Microscopic Analysis

From the microscopic analysis we have tabulated the following data for each celt. Following the identification number will be a name assigned on the basis of mineral composition and texture. It must be remembered that the name is of little value in itself. As a science, petrology must have names upon which to rely when talking about a given suite of rocks. But the names are really only labels for families of rocks grouped on the basis of composition, texture, and color. For example, the gabbro and diorite families are separated by the type of plagioclase feldspar and mafic minerals. Graduations can be found that would put the rock in question into a

border zone involving both "standard" gabbro and diorite. It is obvious, therefore, that the detailed descriptions will be of more importance from the standpoint of archeology when tracing sources, rather than some technical name.

AZ - 675 Gabbor (Diabase)

Megascopic — A fine grained, dark green rock. Close inspection of a cut surface reveals large patches (5 mm.) of pyroxene surrounded by green veinlets.

Microscopic — Well developed ophitic texture in which the large pyroxene crystals completely enclose numerous euhedral plagioclase feldspar crystals. The pyroxene is anhedral. The veinlets are found to be composed mainly of magnetite (also enclosing feldspar crystals) and clinozoisite-epidote. The plagioclase is unaltered. The pyroxene crystals are probably the results of later cyrstallization, as compared to the euhedral enclosed plagioclase. Alteration, probably hydrothermal, has altered the pyroxene to form the veinlets of clinozoisite-epidote. Other alternation minerals are probably present. Approximate percentage composition by volume is: 30% Pyroxene = Pigionite; 45% Feldspar = Plagioclase (Andesine, 45%An); 10% Clinozoisite-Epidote; 10% Magnetite.

AZ - 242 Gabbro (Diabase)

Megascopic — Medium grained, dark gray-green rock. The feldspars are seen as lathes randomly oriented in a background of gray-green.

Microscopic — Subhedral crystals of pyroxene in a matrix of feldspar lathes. Some of the feldspars are partially enclosed by the pyroxene. Alteration of some of the pyroxene to serpentine and feldspar to sericite can be seen. The texture is ophitic. Composition: 30% Pyroxene — Augite and Pigionite; 50% Feldspar = Plagioclase (Andesine, 45%-An); 10% Magnetite; Accessory minerals — Biotite, Sericite, and Serpentine.

AZ - 636 Diorite

Megascopic — Medium grained, dark green rock. The weathered surface produces a random orientation of lathe-like feldspar in a dark green background. The texture would be termed diabasic.

Microscopic — The major minerals occur in euhedral and subhedral crystals. The size of the crystals is about equal for all major minerals. Much of the pyroxene has undergone alteration to amphibole. The feldspar is plagioclase with some potash feldspar also seen. The feldspars have been altered in some cases to sericite. Serpentine was observed in small quantities. Interstitial quartz is present, along with some myrmekite. Minor amounts of magnetite and biotite were seen. Composition: 15% Pyroxene — Pigionite; 10% Amphibole; 50% Feldspar = Plagioclase (35%) (Andesine, 30%An) and Potash (Orthoclase); 10% Sericite and Serpentine; 10% Quartz, Myrmekite, Magnetite and Biotite.

AZ — 613 Diorite

Megascopic — Medium grained, dark rock. The feldspar crystals can be seen in some cases to be phenocrysts, but the majority of the feldspars occur as lathes randomly oriented in a gray-green matrix.

Microscopic — Major constituents are of equal size with a few euhedral phenocrysts of feldspar seen. Alternation has produced sericite and serpentine, masking much of the feldspar. The feldspar is lathe-like with random orientation. The pyroxene has been altered to amphibole and it also encloses some of the feldspar crystals. Composition: 35% Pyroxene = Pigionite altering to Hornblende with the ratio of Hornblende to Pigionite about 4:1; 40% Feldspar = Plagioclase (Andesine, 35-40%An?); 20% Sericite and Serpentine (the Serpentine in veinlets around the pyroxene); 5% Magnetite.

AZ - 247 Diorite Porphry

Megascopic — Coarse grained rock with phenocrysts of feldspar in a matrix of gray-green fine grained material resembling AZ-675. Weathered surface shows mottled appearance of large feldspar crystals surrounded by brown and green patches.

Microscopic — The large feldspar crystals are euhedral, zoned phenocrysts showing alteration to sericite. The pyroxene crystals are smaller, but occur as phenocrysts in a matrix

of lath-like feldspar crystals. The pyroxene is altering to amphibole. Alteration has also produced serpentine and clay minerals. Quartz and magnetite also are present along with some orthoclase. Composition: 20% Pyroxene = Pigionite; 5% Amphibole = Hornblende; 50% Feldspar = Plagioclase matrix (Oligoclase, 25%An), phenocrysts are higher in anorthite content (45%An), Orthoclase seen in minor amounts; 20% Sericite, Serpentine and clay minerals; minor amounts of Magnetite and Quartz.

AZ - 442 Lamprophyre (Vogesite)

Megascopic — A fine grained, dark green to black rock.

Microscopic — The predominant mineral is an amphibole occurring in euhedral to subhedral. In many places, this amphibole encloses small patches of Orthoclase. The Plagioclase feldspar present is sericitized. A few patches of Magnetite were observed, appearing as groups of 10 to 15 small ovoids. Composition: 75% Amphibole = Hornblende and Anthrophyllite; 20% Feldspar = Potash (Orthoclase) predominates, Plagioclase is andesine or oligoclase (?); Magnetite, Kaolin and Sericite in minor amounts.

AZ — 519 Spilite or Metamorphosed Basic Rock

Megascopic — Fine grained, dark gray-green rock. An occasional phenocryst of calcite can be seen. The thin section reveals an even distribution of black specks throughout the rock (Magnetite). Calcite phenocrysts as large as 3 mm. were noted. Along the weathered edge was a zone of lighter rock that contained some pyrite. The thin section did not include this zone.

Microscopic — a background of divergent altered plagioclase lathes containing patches of calcite and magnetite distributed throughout. The calcite occurs with small quantities of quartz and with green rims around the calcite. This green material is slightly pleochroic and is probably the result of the alteration of some pyroxene or amphibole. Minor amounts of ziscon, apatite, biotite were noted. This type may be an altered (deuteric) spilite or a weakly metamorphosed basic rock. Composition: 45% Feldspar =Plagioclase (Andesine) and Orthoclase; 20% Sericite; 10% Calcite and Chlorite; 20% Magnetite; minor amounts of

Zircon, Apatite, Quartz, Pyrite and Biotite.

AZ - a Hornfel

Megascopic — Medium grained, dark green rock. A few crystals of lathe-like feldspar were seen in the dark green background.

Microscopic — Random orientation of subhedral chlorite and amphibole. Patches of euhedral clinozoisite - epidote are found distributed throughout. Most of the feldspar present is orthoclase with occasional phenocrysts of plagioclase. Also noted was some carbonate mineral and small amounts of quartz. The amphibole has a sieve-like texture in which the crystal has numerous anhedral patches of orthoclase and quartz enclosed within it. This might be interpreted as a metamorphosed basic rock. Composition: 40% Amphibole and Chlorite; 30% Feldspar = Orthoclase predominant and some Plagioclase (Oligoclase); 25% Clinozoisite-Epidote minerals; minor amounts of Carbonate and Quartz.

From the eight microscopic descriptions, it is apparent that they differ considerably from the general characteristics offered under the megascopic descriptions. In summary, we can generalize and say that they are basic (low silica) rocks. Five of the celts (viz., AZ-675, 242, 636, 613, 247) are similar in mineral composition and can be called plutonic rocks that have been intruded as sills or dikes. The depths at which these bodies were intruded into the exisiting sediments may be reflected in the coarseness of the crystals. This very general environment can be observed in northern Wisconsin and Upper Michigan. Numerous occurrences of basic rocks found as dikes and sills can be found to the north.

Two of the celts (AZ-519 and a) are fashioned from rocks that are probably metamorphic. In both it has been noted that they are probably altered basic rocks. In northern Wisconsin can be found large areas of metamorphic rock that include types such as those described. In this case, the basic rocks mentioned above have undergone changes that produce distinctive minerals and textures. The lamprophyre (AZ-442), not as common, also occurs to the north. Lamprophyres are related genetically to plutonic rocks, while others are associ-

ated with volcanic environments. In this case, lamprophyres can also be found in northern Wisconsin and are associated with plutonic rocks.

Discussion of Results

The eight celts studied represent a very small part of the total number uncovered at Aztalan. From this analysis we can draw no new conclusions about source of material, nor can one generalize on the possibility of discovering trade material by this method.

From the description it is apparent that each celt is made of material that could well have been obtained from the glacial drift. Each seems to be different in microscopic detail. For example, AZ-675 and 242 are similar in the major mineral constituents, yet differ in the degree of ophitic texture and the minor minerals found. It is this type of diversity that can be used to establish more definite relationships between artifact and original source of the material. In this instance, the very diversity of material suggests that no single quarry source, unless it is one in drift deposits, was being utilized. Rather than to assume that a wide variety of rock outcrops were being exploited by the people of Aztalan, it would seem preferable to regard this as positive evidence of the use of glacial deposits.

From the archeological literature it is apparent that each investigator, when discussing his artifacts, tries to give the reader some information as to the original source of the raw material. In doing so, he is usually required to base his remarks on megascopic observations. Many rocks may resemble each other and yet actually be somewhat different in details. In order to determine the details, the microscopic approach is needed.

In this work the details have been different enough, but we are not working in an area where the details are known about the individual rocks available. When we know more about the igneous and metamorphic rocks occurring in the glacial drift, a study of this kind may be more rewarding. Further studies of this nature will eventually determine with greater accuracy whether a given artifact is made of local or imported material.

REFERENCES

ALDEN, W. C.
1918. "The Quaternary Geology of Southeastern Wisconsin" U. S. G. S. **Professional Paper** 106.

BARRETT, S. A.
1933. "Ancient Aztalan. **"Bulletin of the Public Museum of the City of Milwaukee.** Vol. XIII, pp. 1-602.

BROOKS, T. B.
1880. "Geology of the Menominee Region." **Geology of Wisconsin**, Vol. III, Part VII.

IRVING, R. D.
1880. "General Geology of the Lake Superior Region." **Geology of Wisconsin**, Vol. III, Part I.

KEILER, A.; PIGGOTT, S. and WALLIS, F. S.
1941. "First Report of the Sub-Committee of the South-Western Group of Museums and Art Galleries on the Petrological Identification of Stone Axes." **Proceedings of the Prehistoric Society**, n. s. Vol. VII, pp. 50-72.

PUMPELLY, R.
1880. "Lithology of the Keeweenawan or Copper-Bearing System." **Geology of Wisconsin**, Vol. III, Part II.

STONE, J. F. S. and WALLIS, F. S.
1947. "Second Report of the - - - Stone Axes." **Proceedings of the Prehistoric Society**, n. s. Vol. XIII, pp. 47-55.
1951. "Third Report of the - - - Stone Axes." **Proceedings of the Prehistoric Society**, n. s. Vol. XVII, pp. 99-158.

WEIDMAN, S.
1898. "Pre-Cambrian Igneous Rocks of the Fox River Valley, Wisconsin." Wisconsin Geological and Natural History Survey, **Bulletin** No. 11, Scientific Series No. 2.
1907. "The Geology of North Central Wisconsin." Wisconsin Geological and Natural History Survey, **Bulletin** No. 16, Scientific Series No. 4.

LATE WOODLAND POTTERY IN WISCONSIN AS SEEN FROM AZTALAN

David A. Baerreis and Joan E. Freeman

Introduction

This report is concerned with a portion of the broken fragments of pottery vessels recovered in the recent work at the site of Aztalan. While it is perhaps immediately obvious why further work is needed to recover greater detail about such aspects as the manner in which houses were constructed, the need for additional study of Aztalan ceramics may not be quite as obvious. To clarify this need, one distinctive feature of the site should be recalled. Aztalan is a northern outpost of a culture known as Middle Mississippi, related to and in some ways indistinguishable from such major

centers as the site of Cahokia in East Saint Louis. Wisconsin, in the late prehistoric period, witnessed a migration by a group of Middle Mississippi Indians who doubtless advanced up the Rock River and then the Crawfish, settling at Aztalan where they built a substantial palisade around their cluster of houses. But the site is not simply a transplanted colony from the south, for either upon their trip into Wisconsin or shortly after their arrival they incorporated into their local group some Indians of Woodland culture. The evidence for this is seen in part in the types of pottery found at the site. This craft, traditionally practiced by the women of the community, is found at Aztalan in two major varieties, known as wares. One ware, having smooth surfaces and the clay mixed with mussel shell as temper (or grog, as it is known to the modern potter) is virtually identical to that of Cahokia. This is the pottery brought by the Mississippian women of the invading group. The other pottery variety, characterized by a grit or crushed stone temper and a cord roughened surface, is a ware made by the Woodland Indians of Wisconsin, people who lived in the region long before the Mississippi group arrived. Obviously the history of the people of Aztalan can not be reconstructed from this site alone — it must be related to the Mississippi group on the one hand, and to the Woodland peoples on the other. And one of the primary means by which such connections can be studied is through a comparison of the ceramics.

To return to the specific problems of Aztalan, the relationships of the Woodland and Mississippi ceramics to each other must be examined in all portions of the site. If some portion can be found where only Mississippi pottery is present, then it can be assumed that only after the arrival of this people in Wisconsin either intermarriage with the Woodland people or capture of their women took place. If Woodland and Middle Mississippi ceramics are found intermingled in all portions of the site, as now appears to be the case, then we may assume that the fusion of the two groups took place before the settlement was founded. Thus through a study of the distribution of the ceramic wares at the site we may hope to recover some details of the history of the settlement.

A detailed study of the ceramics may also throw some light on a further unresolved question concerning the site of Aztalan. We can at present only speculate on the length of time the settlement was in existence. Did they occupy the site for only 25 or 50 years, or did they perhaps live on the banks of the Crawfish for several hundred years? Certainly the longer they occupied the settlement, the more likely we are to see a a gradual change and development within the major wares at the site. While both the Woodland and Middle Mississippi wares could have been in use, and doubtless were, during the entire life span of the settlement if this life span were short we should find a relatively homogeneous ceramic complex in all portions of the site. If, on the other hand, the span of occupation is a long one, we should expect to find the pottery wares changing — in vessel shape, technique and style of decoration, and all of the other attributes which collectively comprise a pottery type. Thus, through an analysis of the amount of culture change as seen in the local pottery we may hope to cast some light on the question of the length of occupation.

While this introductory discussion has not been exhaustive, it may serve to indicate the rationale for a detailed study of ceramic types. In the body of the paper we are specifically concerned with only one of the varieties of Woodland pottery commonly found at the site. This variety is characterized by the possesion of a "collar", a strip of clay or rim brace which has been added to the rim and creates a marked thickening of the vessel wall at this point. Since vessels bearing this feature have a wide distribution in the northern United States, we have attempted to provide a broader perspective for its interpretation by comparing the Aztalan ceramics with related material in Wisconsin following the intensive analysis of the Aztalan data.

Aztalan Woodland Pottery

In the primary description of the site, **Ancient Aztalan**, written by Dr. S. A. Barrett we find that two types of Woodland pottery are defined. They are briefly characterized as follows:

"The first is a simple olla-shaped pottery, with more or less

conoidal base, and always with circular opening. This type as a rule bears little or no decoration. The second type is of similar general form but has an angular opening, the rim of which is usually more or less decorated. In some cases this decoration is quite elaborate.

"The circular-mouthed, grit-tempered ware is in every way typical of the true Lake Michigan ware so commonly found at many other sites in Wisconsin.

"The angular-mouthed pottery, while made by the same general processes, is of quite different type. Until more is known about the pottery of adjacent regions, it will be best, as above stated, to apply to this the very general term of Woodland pottery" (Barrett, 1933: p. 304).

Initially it is essential to test the generalization made regarding the distinction between the circular-mouthed (Lake Michigan) and angular-mouthed (Woodland) collared pottery as proposed by Dr. Barrett. Is there actually a difference in the frequency and type of decoration in these two varieties? The distinction is not immediately obvious in examining a series of sherds yet the point must be established to determine the proper manner in which the Woodland pottery should be classified. It should be pointed out that actually the distinction between the circular-mouthed and angular-mouthed vessels is not easy to make unless a large section of the rim is present. A small sherd from a position between the peaks in the rim could readily be mistaken for a vessel with a large circular mouth.

In Table I we have tabulated a series of traits for the collared Woodland pottery of Aztalan making a dichotomous division, placing all rim sherds either in a category of "angular-mouthed" or "circular-mouthed" to conform to the division made by Dr. Barrett. Some trace of the angular peak on the rim must have been present on the sherd to place it in the angular-mouthed division. Thus it is possible, as we previously stated, that the circular-mouthed division might be somewhat weighted by the addition of a few sherds from sectors between the angular corners. It is not thought, however, that this would obscure major differences if two varieties actually exist. With this in mind, attributes of form

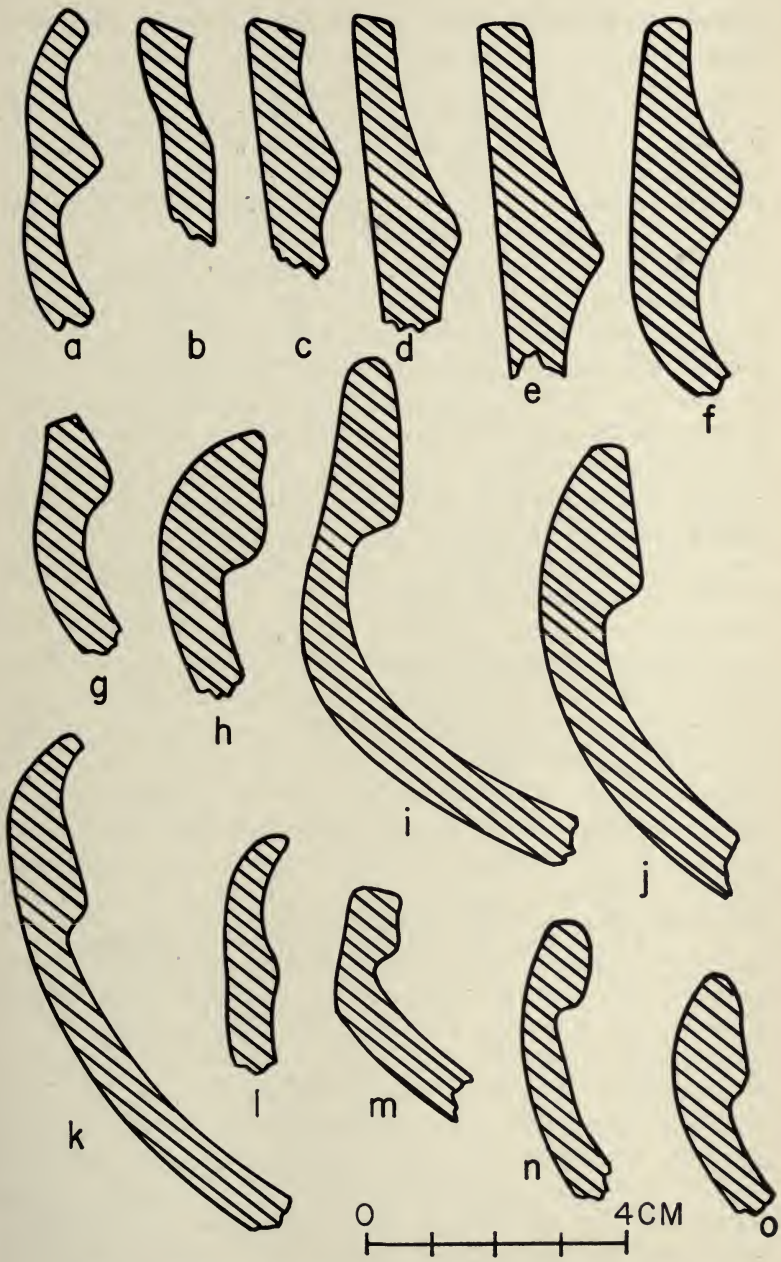


Figure 1. Aztalan Collared Rim Profiles. Interior to left.

and decoration associated with the two varieties of orifice were listed.

An initial division was made on the basis of rim form. Rim Variety I consists of those rims having an outer collar face which is markedly concave and increases in thickness toward its base (Figure 1, a-f). In Variety 2 the outer face of the collar is straight or convex and it also expands in thickness from the lip area to the base of the collar (Figure 1, g-j). Variety 3 (Figure 1, k-l) has a collar of relatively uniform thickness with the outer surface either straight or slightly convex. All sherds placed in Varieties 1 and 2 had an increase in collar thickness of more than 2 mm. Variety 4 (Figure 1, m-o) might be regarded as a special variant of Variety 1 in that both have a concave outer face to the rim collar but in Variety 4 the lip area is thinned and tapering and has a marked outward curvature. It is to be noted in Table 1 that while the varieties appear in the same order of popularity in both the circular and angular orifice, the percentages of a given type do vary. Variety 2, for example, comprises 68% of the angular-mouthed vessels but 51% of the circular-mouthed vessels. The question to be raised is whether this is a significant difference or whether the variation may be simply due to the fact that with a total of only 28 rims in the angular-mouthed category there may be a distortion due to the small sample size. Unless percentages are based upon groups of equal size, the significance of differences is difficult to evaluate. In this instance we can provide a test of the significance of the difference between the proportions in the two groups. We have calculated the standard error of difference between proportions and unless the observed difference between the proportions is three times its standard error, we do not assume it is significant (Chambers, 1952: p. 47). To illustrate the application of this formula, the difference between the proportions of Variety 1 rims (51% of circular-mouthed rims and 68% of angular-mouthed rims) is .17 while the standard error of difference of proportions in this instance is .096. Since the difference between the proportions is slightly less than twice the standard error (rather than three times), it can not be regarded as

a real difference. This would similarly hold for Variety 2 (a difference of .17 in proportions with a standard error of .098) and for Variety 3 (a difference of only .01 with a standard error of .061). Rim features, therefore, indicate no real difference between the two groups.

A similar operation can be performed in connection with the lip form which is tabulated as squared (Figure 1, a, d, e, k, m), rounded (Figure 1, f, h-j, 1, n-o), or beveled outward (Figure 1, b-c) or inward (Figure 1, g). In lip form the most dissimilar of the proportions consists of the rounded lips where it is of the magnitude of .05. Since the standard error of difference of proportion is .091 there is clearly no real difference between the two groups.

The height of the collar was also a variable that could be measured and tabulated and the range in variation is presented in Table 1. Collar height was measured from lip to the point of maximum constriction below the collar. The range in height is not too dissimilar and the mean height is nearly identical.

TABLE 1. A Trait Comparison of the "Angular-Mouthed" and "Circular-Mouthed" Woodland Pottery at Aztalan.

Trait	"Circular-Mouthed"		"Angular-Mouthed"	
Rim Form:				
	f	%	f	%
Variety 1	133	38	6	21
Variety 2	187	51	19	68
Variety 3	36	10	3	11
Variety 4	3	1	0	
Lip Form:				
Squared	228	66	18	64
Rounded	107	31	10	36
Beveled outward	10	3	0	
Beveled inward	2	.6	0	
Collar Height (in mm.):				
5 - 9 mm.	1		1	
10 - 14 mm.	14		2	
15 - 19 mm.	45		5	
20 - 24 mm.	153		8	
25 - 29 mm	85		3	
30 - 34 mm.	37		7	
35 - 39 mm	6		1	
40 mm. and above	5			
Mean collar height	23.7		23.5	
Area Decorated:				
Undecorated	89	25*	3	11*
Rim interior	28	8	4	14
Interior edge of lip	178	50	9	32
Lip proper	91	26	16	57

Collar	47	13	5	18
Lower margin of collar	86	24	6	21
Neck	1		0	
Combinations of Decorated Areas:				
Interior only	13	4	1	4
Lip only	150	42	12	43
Collar only **	14	4	2	7
Interior + lip	3	1	1	4
Interior + lip + collar	5	1	1	4
Interior + lip + collar + neck	1		0	
Interior + collar	6	2	1	4
Lip + collar	73	21	7	25

* The percentage is based upon the total number of sherds including undecorated specimens, not the total frequency of areas decorated.

** In this section of the table, it also includes "lower margin of collar"; lip also includes "interior edge of lip".

Trait	"Circular-Mouthed"		"Angular-Mouthed"	
	f	%	f	%
Decorative Technique:				
Cord Impressions	164	61	15	60
Smooth notches	76	28	9	36
Cord-wrapped stick	48	18	3	12
Incised	0		1	4
Punctate	2	1	0	
Fabric	4	1	0	
Techique Combinations:				
Cord impressions only	140	52	12	48
Smooth notches only	64	24	9	36
Cord-wrapped stick only	36	13	1	4
Cord impressions + incising	0		1	4
Cord impressions + cord-wrapped stick	10	4	2	8
Cord impression + notches	9	3	0	
Cord impressions + punctate	1		0	
Smooth notches + cord-wrapped stick	2	1	0	
Smooth notches + punctate	1		0	
Fabric + cord impressions	4	1	0	

We may, however, approach more directly the attributes considered by Dr. Barrett in segregating the two pottery varieties. First, it was stated that the circular-mouthed variety bears "little or no decoration." In our sample, 25% of the circular-mouthed variety and 11% of the angular-mouthed variety bore no decoration. While the difference in the proportions is 14%, the standard error is .83 and we therefore conclude there is no real difference between the two groups. We have also tabulated the area where a decoration was applied, utilizing the following categories: interior of vessel; interior edge of lip; lip proper; collar; lower margin of collar; and, neck, i.e., below the collar. The distinction of the tabulation between "lower

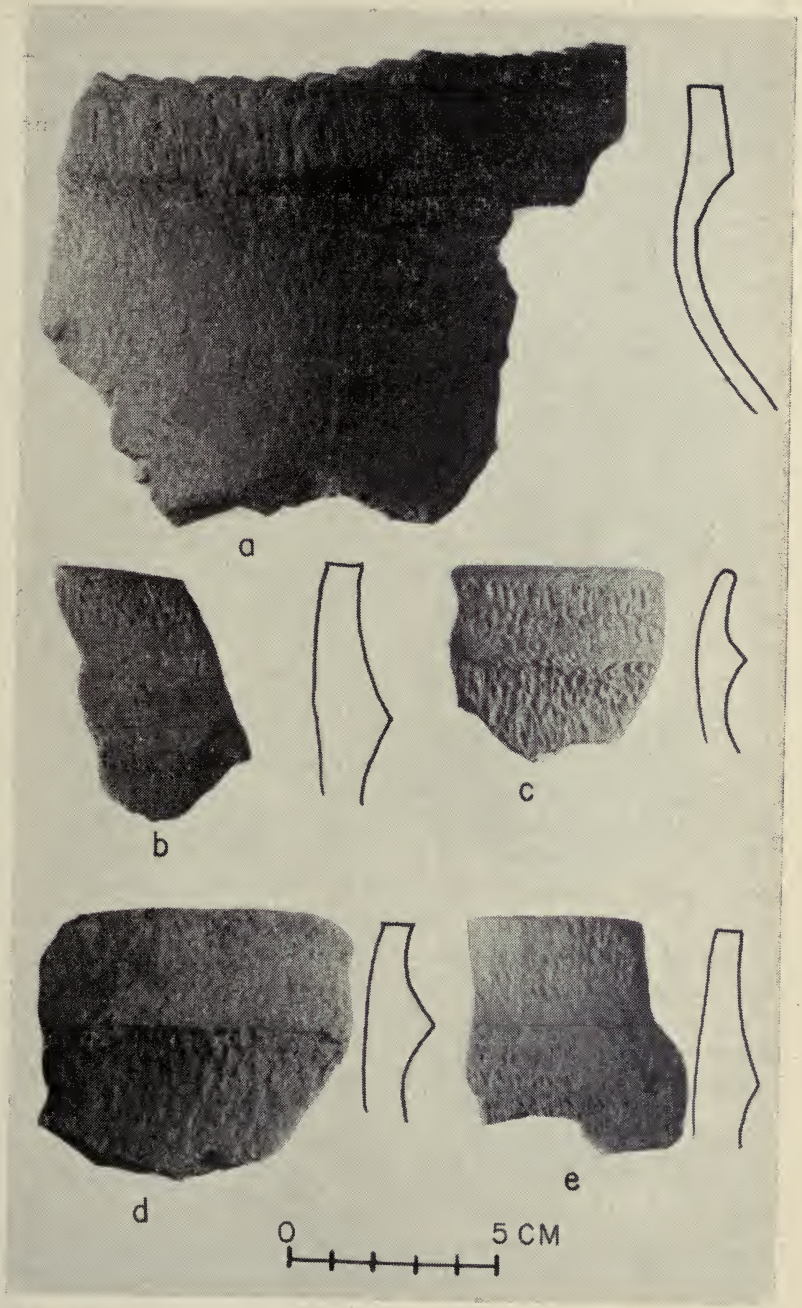


Figure 2. Aztalan Collared. Specimen numbers: a—25962/6948; b—Az 564/2; c—Az 856; d—Az 371/1; e—Az 564/1.

margin of collar" and "neck" is designed to accommodate a distinctive form of decoration which is useful in segregating the collared pottery of Aztalan from other varieties in the region. "Lower margin of collar" is used for those sherds bearing the vertical imprint of a cord-wrapped stick or twisted cord impressions immediately adjacent to the collar Figure 3, b-c, e; Figure 4, c-d). This design will frequently impinge upon both the lower edge of the collar and the neck proper. Designs of a more complex nature which are found below the collar, such as can be seen in the sherds from Point Sauble (Figures 6-8) are tabulated as "neck". The presence of a decoration on one or more of these areas has been tabulated in Table 1 under the caption "Area Decorated." Obviously a single rim sherd may in this instance be tabulated in one or more areas depending on the extent of the coverage of the decoration. Percentages are computed on the basis of the actual number of rim sherds, including undecorated ones. Following this, we have attempted to secure a more precise analysis of the complexity of decoration by tabulating the combination of areas which are covered in a single sherd.

In considering the area decorated, a real difference is found between the two groups only in connection with the decoration on the lip proper. The difference in proportions of .31 is substantially greater than the standard error of .088. However, it should be noted that these proportions are reversed in the tabulation of decoration on the interior edge of the lip so what is involved in the differentiation of the two groups is a tendency to shift the decorated area from squarely on top of the lip to a notching or placement on the inner edge. In all other categories we do not find a real difference between the two groups. This latter statement also holds true in the combinations of decorated areas which should reflect more directly the complexity of the decoration. Complex combinations of decorated areas occur with a low frequency in both groups and in no instance with a statistically significant difference since the standard error tended to be greater than the difference in proportions.

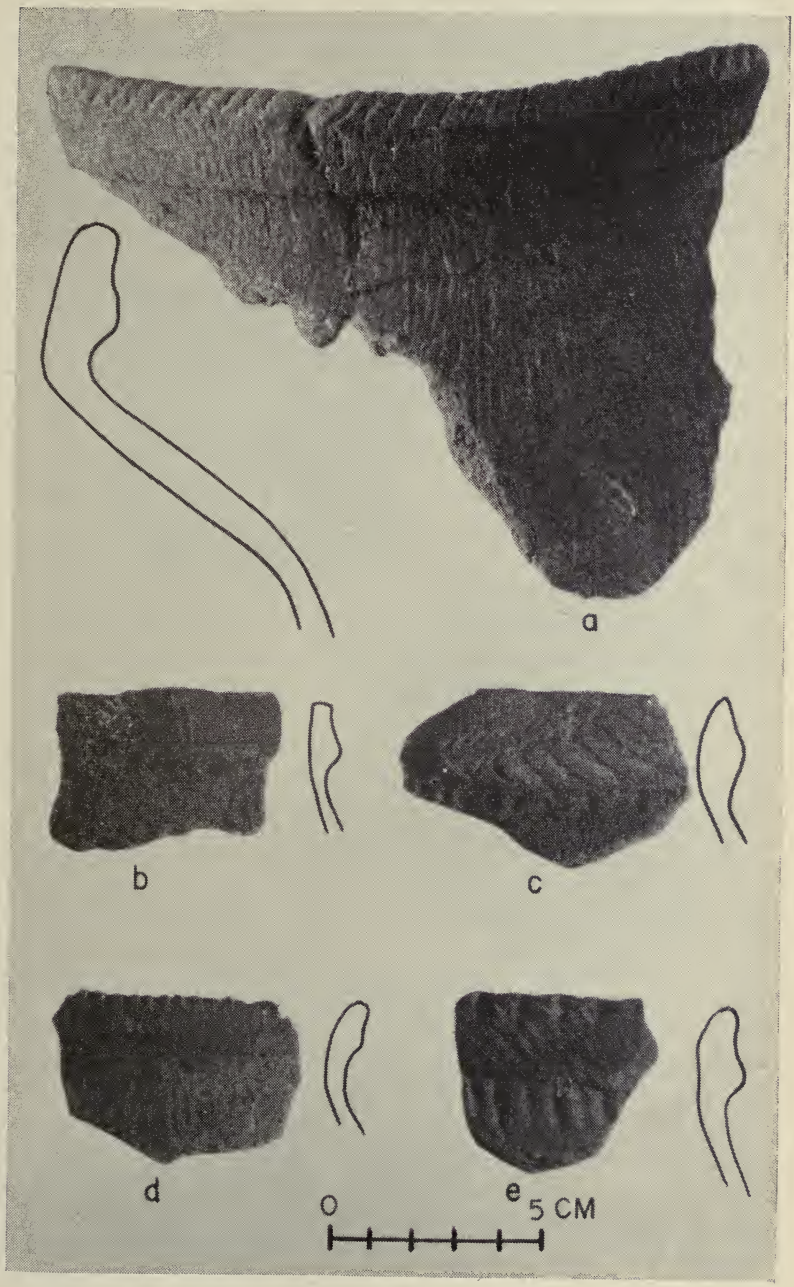


Figure 3. Aztalan Collared. Specimen numbers: a—Az 695/1; b—Az 769/1; c—Az 694/1; d—Az 640/5; e—Az 887/1.

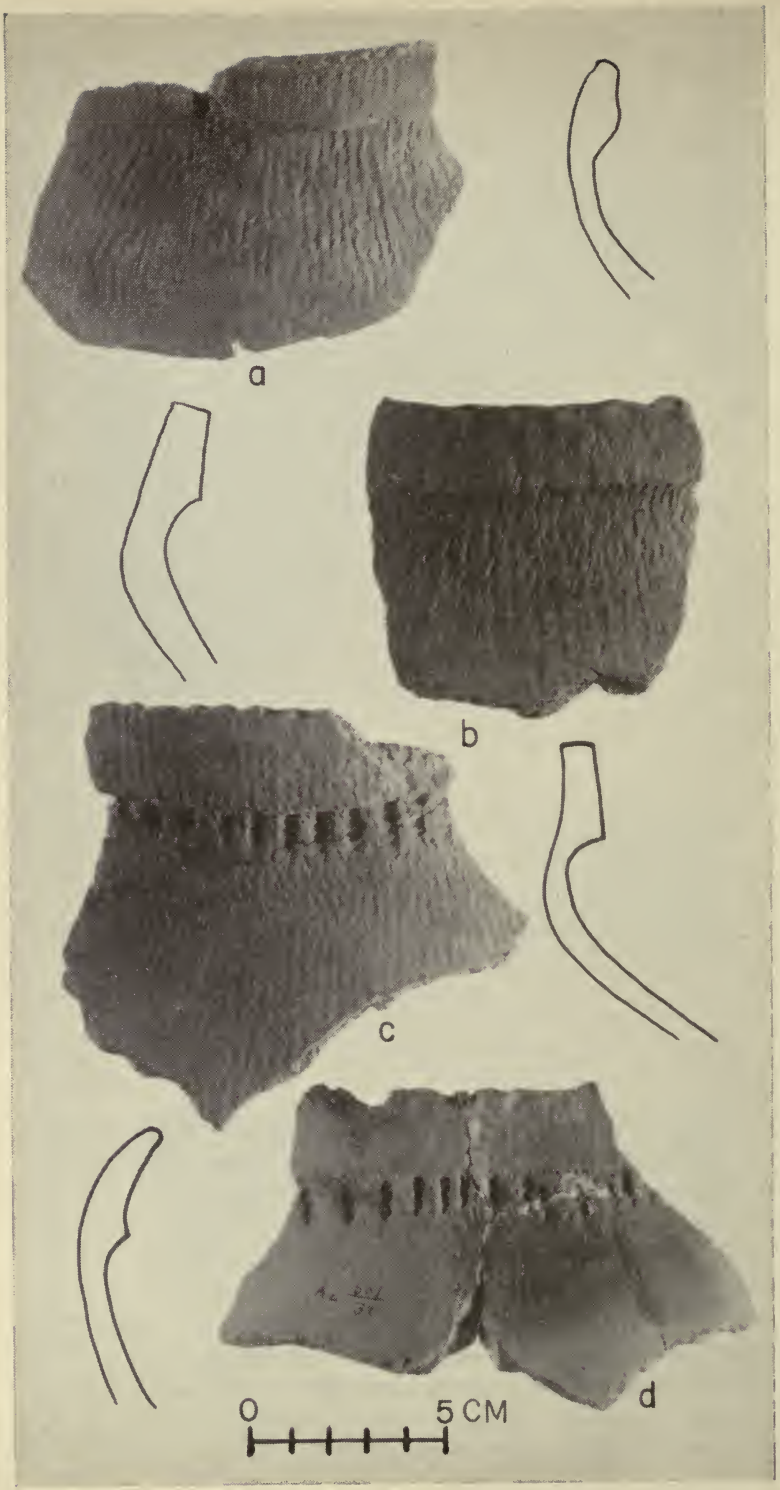


Figure 4. Aztalan Collared. Specimen numbers: a—Az 617/1; b—Az 348/1; c—Az 587/1; d—Az 601/33.

Similar results were obtained in comparisons involving the specific decorative technique used and the combinations of decorative techniques. The frequency of use of the cord-wrapped stick approaches significance in having a difference in proportions of .059 with a standard error of .02 but this is the only instance in the total series. In view of the low frequency of decorative technique combinations in both groups, a comparision was made of a combined series of those instances in which combinations of two techniques were used on the same vessel but the difference in proportions again fell below the size of the standard error.

It is obvious that in the comparitive statistics presented the groups as a whole do not reveal significant differences except for the single instance noted and come to a significant difference in only one additional trait. It may, however, be argued that the present analysis to this point has not tackled directly the problem of design analysis. The patterned arrangement of even a single decorative element could constitute a marked difference between the two varieties. Without adding to the complexity of the tabulated elements, this question will now be examined.

In making the analysis of design complexity we have specifically excluded those rim sherds which bear a decoration on the lip only, on the interior only or with a decoration on the lip and interior only. The frequency of these sherds has already been tabulated (see Combinations of Decorated Areas, Table 1) and the proportions in the two categories found to not differ significantly. These categories, clearly ones bearing a relatively simple decoration, are actually the most frequent forms in both the circular-mouthed and angular-mouthed groups. The next most common pattern of decoration is one in which the lip is decorated and in conjunction with this the lower margin of the collar bears the vertical imprints of a cord-wrapped stick or heavy twisted cord impressions (Figure 4, c-d). In this variety the collar proper is undecorated. This design is to be found on 50 (14%) of the rims of the circular-mouthed variety and 5 (18%) of the rims of the angular-mouthed variety. The standard error

(.06) is in excess of the difference in proportions so there is no real difference in the groups. In addition, seven rims of the circular-mouthed group have this decoration on the lower margin of the collar but lack a decoration on the lip though one specimen bears a decoration on the interior of the rim. The remaining rims (42 in the circular-mouthed group; 6 in the angular-mouthed group) bear a decoration on the collar and comprise the most complex decorative patterns. If in this group of sherds which have a decoration on the collar, we consider only those where the entire collar is covered with a decoration (6 or 21% of the angular-mouthed and 20 or 6% of the circular-mouthed group), we have a significant difference between the two groups in one trait. One of the common decorative patterns on the collar is a series of parallel horizontal lines. Three angular-mouthed sherds combine this pattern with decoration on the interior rim (1 example), on the lip and lower margin of the collar (1 example), and on the interior and lip (1 example). In the circular-mouthed category there is one example of this pattern alone. The pattern is combined with decoration on the lower margin of the collar (2 examples), with cord impressions on the lip (2 examples), with the interior, lip, and lower margin of the collar decorated (2 examples), and one example each of a combination with interior and lip decoration, lip and lower margin of the collar, and interior and lower margin of the collar. There is a total of ten sherds in the circular-mouthed group and in combination with other decorated areas.

Another common decorative pattern consisted of a series of parallel, diagonal, cord impressed lines, leaning to the right or left. A single sherd of the angular-mouthed group bears this pattern alone. Five of the circular-mouthed category have this pattern combined with interior and lower margin of the collar decoration (2 examples), with interior, lip and lower margin of the collar (1 example), and one example of this pattern alone. Another decorative pattern found on one circular-mouthed sherd consisted of a series of vertical lines.

Those specimens which can be regarded as a complex design are few in number (four in the circular-mouthed category and two in the angular-mouthed category). Three

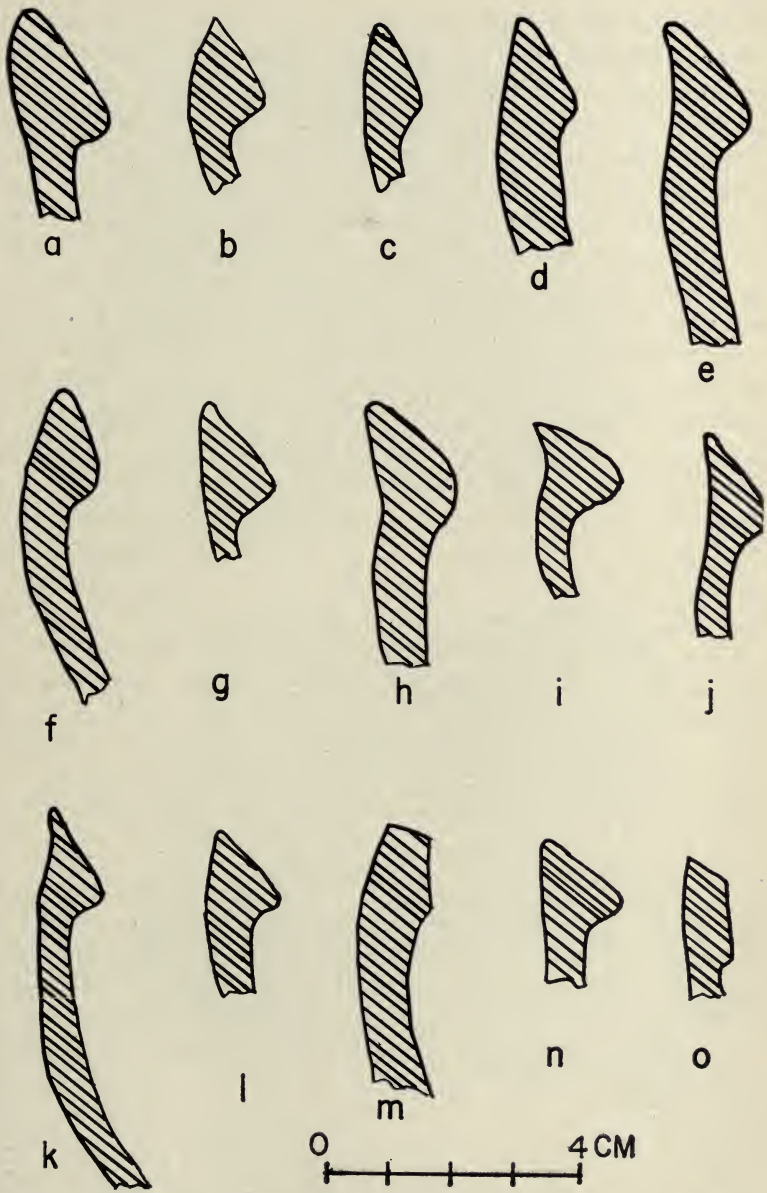


Figure 5. Point Sauble Collared Rim Profiles. Interior to left.

in the first group consist basically of a pattern of opposed areas of parallel, diagonal lines (Figure 3, c) which may be associated with a modification of the lower border of the collar as in the illustrated specimen. The remaining sherd in this group has a pattern in which opposed diagonal lines are superimposed upon a band of horizontal lines with the lower margin bordered by short vertical imprints. The complex designs of the second group include a pattern of diagonal lines resting upon a base of horizontal lines which in turn is bordered by short vertical lines. The alternative pattern comprises an inverted chevron, a pattern which can readily be used to accentuate the angular peaks in the rim of this variety of pottery.

We have excluded from the above discussion those sherds found only in the circular-mouthed category on which the upper or lower border of the collar proper bears a decoration. That on the top of the collar consisted of short, vertical impressions made by smooth notching (1 example), cord-wrapped stick impressions (2 examples), and single cord impressions (7 examples). Another decorative pattern consisted of parallel diagonal cord impressions (5 examples). The decoration at the bottom of the collar was never combined with an upper collar decoration and consisted of short, vertical cord impressions (2 examples), smooth notches (2 examples), one example of diagonal cord impressions and one of a row of punctates.

While there is a significant difference between the two categories in complete collar decoration and the angular-mouthed group does not have a placement of a decoration on either the upper or lower portion of the collar, these decorative patterns are found on only a small percentage of the total series. It has been shown previously that the comparison of the other decorative areas show no significant difference.

Following this enumeration of some of the characteristics of the Aztalan pottery with the repetitive indication of a lack of significance in a comparison of the proportions, we may ask whether the nature of variation within collared Woodland pottery is such that marked differences are to be expected.

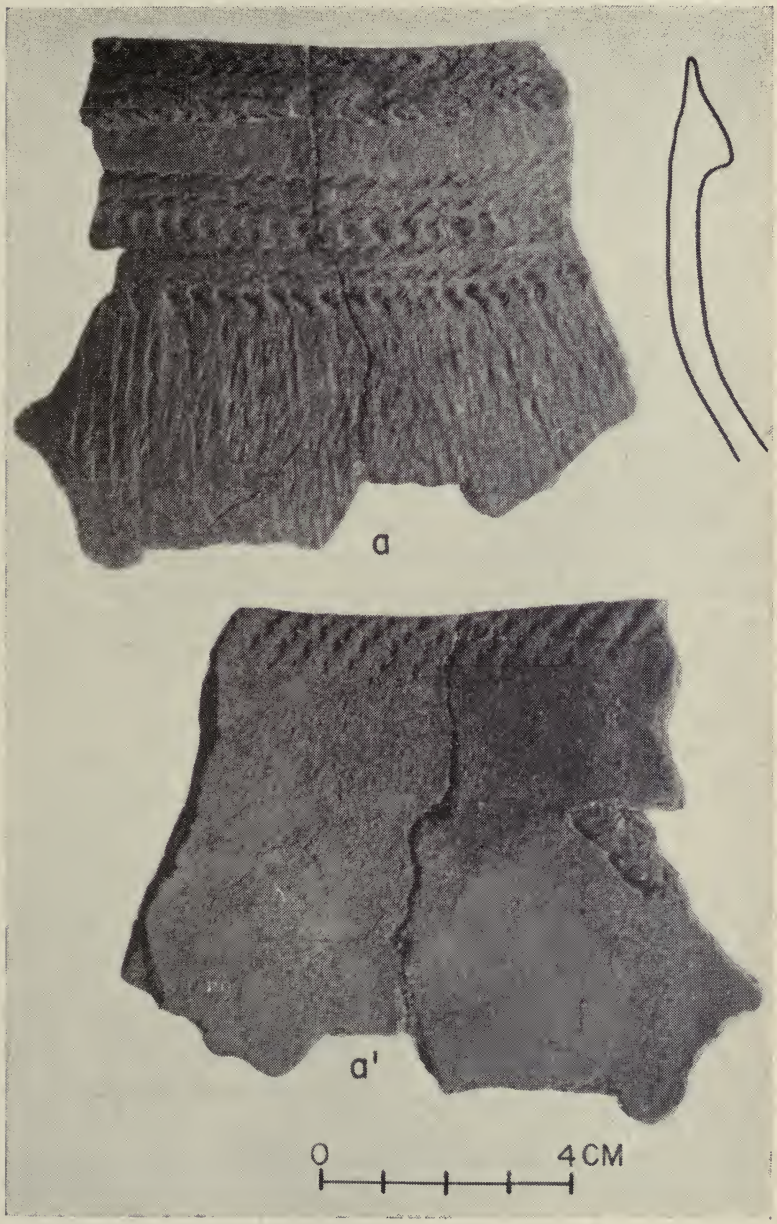


Figure 6. Point Sauble Collared. Specimen number: 51.504.

To consider this question we have included below a description of the collared Woodland pottery from the Point Sauble site near Green Bay, Wisconsin, which we have extracted from a more extended report. (Freeman, 1956).

Point Sauble and its Collared Woodland Pottery

Point Sauble, located on the east shore of Green Bay (NW ½ of the NE ¼, Sec. 1, T 24 N, R 21 E) has long been noted as an important recent village site though its actual history was a complex one since materials have been collected which can be attributed to several components evidently separated in time. The sample of material here used is now in the Museum of the State Historical Society and was largely collected by Robert L. Hall and Warren L. Wittry though it was supplemented in part by student excavations from the University of Wisconsin in 1950. Of this body of materials thirty-nine rim sherds possess a collar and may be profitably compared with the Aztalan collared varient. In dealing with the Aztalan material, details of paste, temper and manufacture were omitted because of the availability of the descriptive material in Dr. Barrett's study. For the Point Sauble material, however, it seems desirable to present the total range of characteristics.

The paste was tempered with coarse grit ranging between two and five millimeters in size. Twenty sherds were compact in texture, the remainder being laminated. The grey, black or reddish exterior color continues without change through the interior core. Areas on the exterior bear blackened fire blooms produced during the firing process. The sherds vary between 3 and 4 in the hardness scale.

The exterior of the vessels is cord roughened by a cord-wrapped paddle probably used in the paddle and anvil technique of smoothing the manufacturing coils used to build the vessel walls. The area above the shoulder has been roughly smoothed prior to the application of the design made with double cords or with cord-wrapped stick impressions.

The design covers the vessel exteriors on the rim and the rim on the neck to about half the distance to the shoulder. Three-fourths of the sherds are decorated with a series of parallel, diagonal cord-impressed lines which originate im-

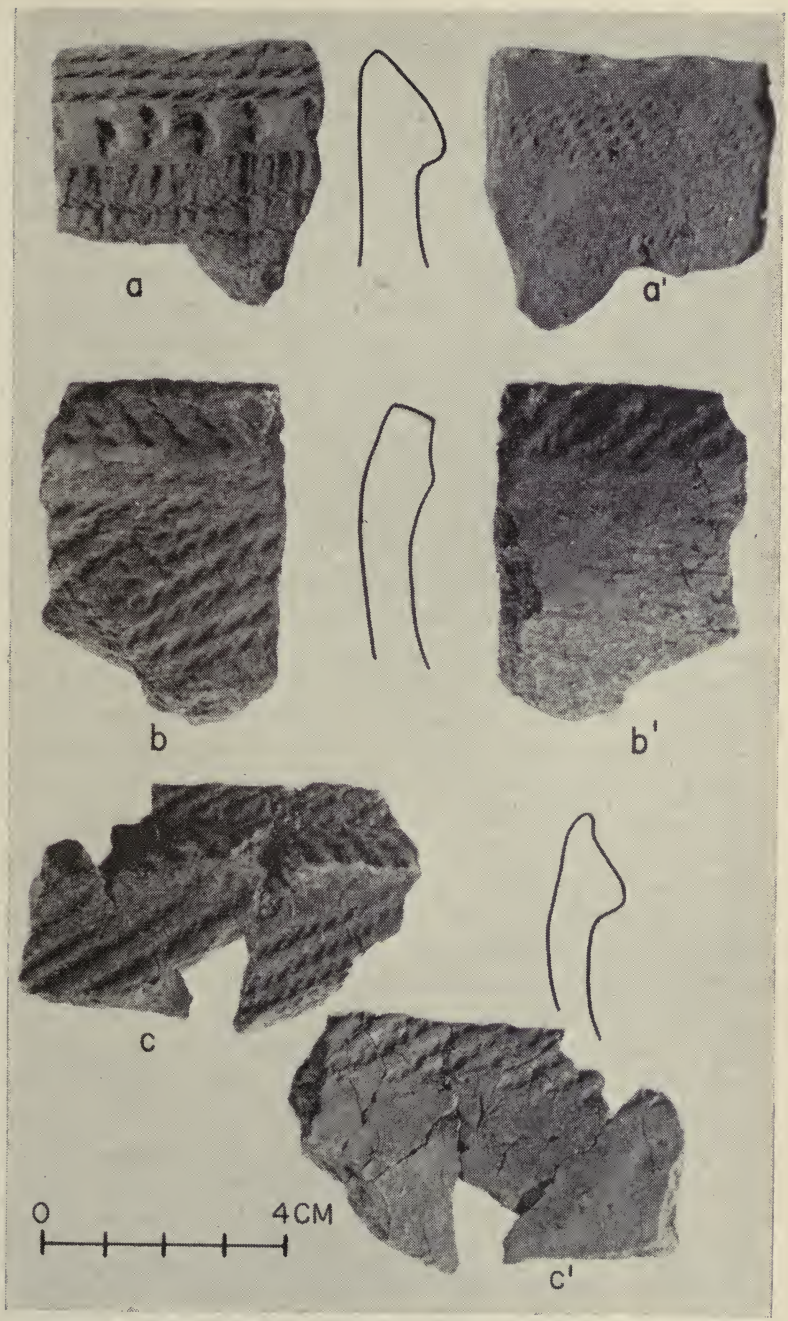


Figure 7. Point Sauble Collared. Specimen numbers: a—51.527; b—50.8844; c—50.8845.

mediately under the collar (Figure 7, b, c; Figure 8, a-b). Often a horizontal row of short vertical cord-wrapped stick impressions are made under the diagonal lines (Figure 8, b). One-fourth of the sherds have parallel lines of horizontal cord impressions under the collar (Figure 7, a). Alternatively, a horizontal row of short vertical, cord-wrapped stick impressions is found under the horizontal, single cord marks or interspaced with the horizontal lines (Figure 6, a).

The collars are always completely covered with a pattern of parallel diagonal, horizontal, vertical, or a combination of diagonal and horizontal cord-impressed lines. The interior lip or rim is decorated on 72% of the sherds, usually with diagonal or vertical cord impressions (Figure 6, a'; Figure 7, b', c'; Figure 8, b') or occasionally with cord-wrapped stick impressions (Figure 7,a'). This interior decoration covers an area 11-15 mm. below the lip. Below the cord-impressed lines on the interior rim of four sherds there are textile impressions (Figure 6, a'; Figure 7, a'). No definite pattern in the application is to be seen as the direction of orientation of the warp threads varies on all sherds.

In form, the collar projects from the interior rim at about a 30° angle with the outer face of the collar straight or convex on over three fourths of the sherds (Figure 5, a-l, n). Other collar varieties present in lesser quantity can be seen in Figure 5, m and o. The collar tapers to a rounded or pointed lip on 86% of the sherds but is occasionally squared (Figure 5, m) or beveled outward (Figure 5, o). The collar at the lip measures 4-9 mm. in thickness and then increases to 10-14 mm. at its base. The body walls are thick, averaging 8 mm. None of the sherds are sufficiently large to determine the complete form of the vessel although the shoulder is rounded.

To further clarify the relationships between the Point Sauble and Aztalan pottery, we have presented an enumeration of the traits in a form similar to the first table. Since significant differences were not established for the two rim varieties at Aztalan, their frequencies are combined in the appropriate column of Table 2. Since we do have a combined column of both circular and angular orifices in the Aztalan

series, it is possible to add this trait to a comparison of the Aztalan and Point Sauble pottery. However, the fact that 92.5% of the Aztalan pottery also has a circular orifice does mean that even though 100% are circular at Point Sauble the difference is not statistically significant. While this may well be an important variable which can serve to differentiate the two pottery varieties, the fact that our total sample of rim sherds from Point Sauble is limited to but 39 prevents us from making a positive statement on this point. The situation clearly points to a need of making sufficiently extensive excavations to permit an adequate analysis of the material.

However, in the analysis of other features the differences between the proportions are even greater so that despite the sample size it is still possible to make a definite statement on the significance of the differences.

TABLE 2. A Trait Comparison of Collared Rim Sherds at Aztalan and Point Sauble.

	Frequency		Percentage	
Trait	**Aztalan**	**Point Sauble**	**Aztalan**	**Point Sauble**
Orifice:				
Circular	347	39	92.5	100.
Angular	28	0	7.5	0
Rim Form:				
Variety 1	139	3	35.9	7.7
Variety 2	206	31	53.2	79.5
Variety 3	39	5	10.0	12.8
Variety 4	3	0	.8	0
Lip Form:				
Squared	246	2	65.6	5.3
Rounded	117	33	31.2	86.8
Beveled outward	10	3	2.7	7.9
Beveled inward	2	0	.5	0
Collar Height (in mm.):				
5- 9 mm.	2			
10-14 mm.	16	7		
15-19 mm.	50	18		
20-24 mm.	161	11		
25-29 mm.	88			
30-34 mm.	44			
35-39 mm.	7			
40 + mm.	5			
Mean collar height	23.7	17.5		
Area Decorated:				
Undecorated	92	0	24.1	0.
Rim interior	32	13	8.4	33.3
Interior edge of lip	186	20	48.7	51.3
Lip proper	107	7	28.0	25.0
Collar	52	38	13.6	97.4
Lower margin of collar	92	1	24.1	2.6

Neck	1	28	.3	71.8
Combinations of Areas:				
Interior only	14	0	3.7	0
Lip only	162	0	42.4	0
Collar only	16	5	4.2	12.8
Interior + lip	4	0	1.0	0
Interior+lip+collar	6	0	1.6	0
Interior+lip+collar + neck	1	5	.3	12.8
Interior + collar	7	2	1.8	5.1
Lip + collar	80	2	20.9	5.1
Lip + collar + neck	0	19	0	48.7
Interior+collar+neck	0	5	0	12.8
Collar + neck	0	1	0	2.6
Decorative Technique:				
Cord impressions	179	38	61	97
Smooth notches	85	0	29	0
Cord-wrapped stick	51	5	17	13
Incised	1	0		
Punctate	2	0		
Fabric	4	4	1	10
Technique Combinations:				
Cord impressions only	151	30	52	77
Smooth notches only	73	0	25	0
Cord-wrapped stick only	37	1	13	3
Cord impressions + incising	1	0	.3	
Cord impressions + cord-wrapped stick	12	4	4	10
Cord impressions + notches	9	0	3	
Cord impressions + punctates	1	0	.3	
Smooth notches + cord-wrapped stick	2	0	.6	
Smooth notches +punctate	1	0	.3	
Fabric + cord impressions	4	4	1.4	10

The difference between the proportions of Variety 1 rims, 28.2, is more than three times the size of the standard error, 9.1. In Variety 2 the difference (26.3) falls slightly below (9.7) but is approaching significance, while there is no real difference in Variety 3. In lip form, both the squared and rounded lips show significant differences, as in "area decorated", rim interior, collar, and neck are similarly significantly different. Although the mean in rim height for Point Sauble (17.5 mm.) appears substantially smaller than that of the Aztalan rims (23.5), the use of that test indicates it is not at a significant level. This also held true of the more

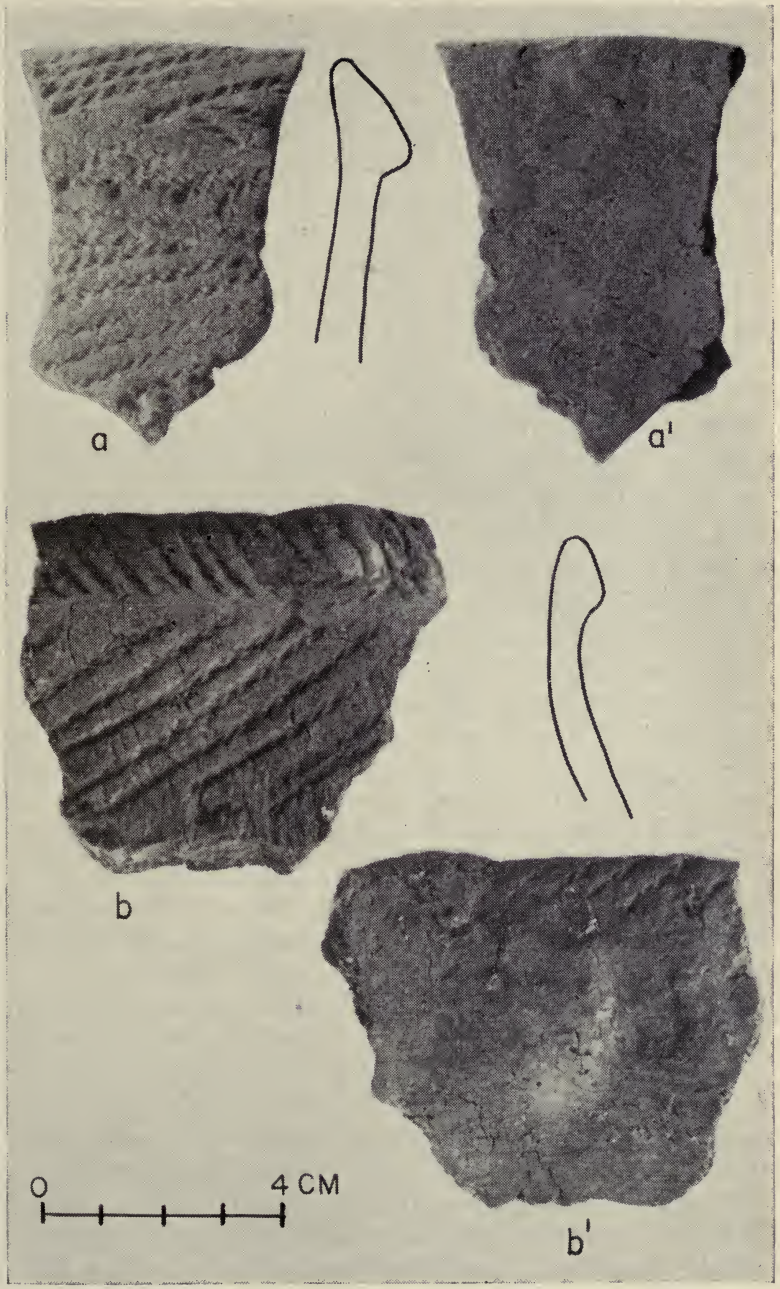


Figure 8. Point Sauble Collared. Specimen numbers: a—51.507. b—51.512.

minute difference between means in the comparison of the circular and angular mouth varieties. The high proportion of undecorated rims (24%) in Aztalan as compared with their complete absence at Point Sauble is a difference which is sufficiently large to be significant in the other proportions. This latter situation is also true of the comparisons of combinations of decorated areas where the greatest differences (lip only, and lip-collar-neck) are to be found where the trait is completely lacking at one site or the other. In addition, the difference in proportions of rims decorated on the interior-neck are significant. We may similarly point to significant differences in two kinds of decorative technique (cord impressions and smooth notches) and in three kinds of combinations of decorative techniques (cord impressions only, smooth notches only, and fabric plus cord impressions).

Thus in fourteen tabulated traits the Point Sauble collared pottery differs in a statistically significant fashion from the Aztalan collared pottery. This contrasts markedly with the situation in the comparison of the circular and angular orifice groups where only two instances of a statistically significant difference in proportions were determined. In view of this, we not only conclude that the Aztalan collared pottery represents a single type but also that the Aztalan and Point Sauble pottery represents two different types.

While the preceding analysis serves to demonstrate either that the two groups of ceramics are similar or that they are different, it does not permit any statement to be made as to how similar or how different the pottery actually is. In this case we may logically conclude on the basis of other evidence that the two series of collared Woodland sherds are ultimately related and perhaps derived from some common source. We should therefore like to know how similar they are, even though we have indicated that sufficient divergence has taken place for them now to be regarded as separate types. A similar problem still remains in connection with the pottery of Aztalan. Although the initial consideration was whether or not the circular and angular orifice pottery comprised separate variants, the question still remains as to whether there are differences in the site associated with different locations

which would in turn reflect time differences. This too could most properly be measured in terms of distance between groups rather than simply whether or not they are similar or different.

The question of the measurement of distance or degree of similarity between two or more populations has been investigated extensively in connection with biological problems. We have made use of a formula utilized in a recent study by W. S. Laughlin and J. B. Jorgensen (1956) which clearly indicates the value of such a tool to calculate the coefficient of divergence. Since, in part, our problem is the measurement of change at Aztalan, the collared sherds for this site were broken down into three area classifications. Under Area A we grouped those sherds found within Sections II, III, IV and V of Dr. Barrett's classification of the excavation units (see Barrett, 1933: Map 2). This area delimited a small stockade which could represent an early stage of growth of the settlement. Area B comprised the remaining sections that were found within the outermost stockade walls, but outside of Area A. Area C consisted of areas producing ceramic materials outside of the stockade walls and sherds of unknown location, the latter being the largest group. These units in turn were compared with the total body of pottery from Point Sauble.

The results of the computations are given in Table 3 where it is to be noted that the three Aztalan areas cluster together without marked differences while all three Aztalan areas are sharply differentiated from Point Sauble. It is difficult to see any time trends within Aztalan on the basis of these figures since the internal Aztalan comparisons do not exhibit a marked trend in the direction of, or away from, the Point Sauble material as might be anticipated. The numbers indicated in the n column represent pairs of traits being compared rather than the number of sherds. Since paired comparisons were not made when any trait showed a O frequency, the elimination of these pairs would tend to bring the Point Sauble and Aztalan series closer together rather than to stress the differences between them. Not too much stress can be placed upon the table because of the lack of

comparable studies which might aid in interpreting the significance of the size of differences. In addition, it would be highly desirable to have an evaluation of the use of the statistical tool for this purpose by a qualified statistician.

Conclusions

In the preceding sections it was demonstrated that the magnitude of the differences between the Point Sauble collared pottery and the pooled Aztalan sample was substantially greater than the difference between the Aztalan var-

TABLE 3. Coefficients of Divergence Between Samples of Aztalan and Point Sauble Collared Woodland Pottery.

	n	Aztalan A	Aztalan B	Aztalan C
n			15	13
Aztalan B	24	.124		
Aztalan C	22	.110	.178	
Pt. Sauble	15	.362	.334	.321

ieties identified by the circular and angular orifice. Clearly the differences between Point Sauble and Aztalan are on the order of that used in defining separate types and we would propose that they be designated **Point Sauble Collared** and **Aztalan Collared** respectively. The distinctions between the two types are clear and as groups they can be readily separated. Sherds within both groups, however, show considerable overlap. At Aztalan, for example, one can see specimens (Barrett, 1933, Fig. 85) which would readily fall in **Point Sauble Collared.** The concept used in the formulation of the types is that they comprise a pattern of associated attributes which were favored by the makers of the artifacts (Spaulding, 1953). Within this broader pattern there will then be a minor range in variation which will overlap with other types. The implication of this concept is, of course, that in many instances an individual sherd can not be identified as to type—a group of sherds must be studied. If this premise is accepted, there is a further point which has not received adequate attention in archeological investigations, the question of sample size. If groups of artifacts are to be compared, the groups must be of adequate size to permit the application of an appropriate statistical test to determine whether they are actually similar or different. In this present analysis some questions are still unresolved because of a small sample size.

In the internal comparison of the Aztalan vessels with circular or angular mouth, some differences were found between the two categories but these were of a lesser order of magnitude than in the Point Sauble - Aztalan comparisons. As Dr. Barrett originally indicated, though certainly not with the distinctiveness implied by his provisional segregation into distinct wares, there is a tendency for some traits, particularly in the embellishment of the entire exterior collar and to a lesser extent in the elaboration of the interior rim decoration, to be associated with an angular orifice. On the basis of our sample of the material these appear to be a minor element in the Aztalan collared Woodland ceramics, representing a local variant within a single type. It is possible that one is seeing here a ceramic type in the process of differentiating from a parent group. If archaeological evidence were found which demonstrated the presence of the angular orifice variety as a dominant group or preferably with other attributes significantly associated with it, there would be justification for establishing the group as a separate type.

The two major types, **Point Sauble Collared** and **Aztalan Collared** are related types of the same general time period, falling in the latter part of Wisconsin's prehistory. Whether they are essentially spatial variants or time variants is a problem still unresolved by present archaelogical research.

BIBLIOGRAPHY

BARRETT, S. A.
1933. "Ancient Aztalan," **Bulletin of the Public Museum of the City of Milwaukee,** Vol. XIII, pp. 1-602.

CHAMBERS, E. G.
1952. **Statistical Calculation for Beginners.** Cambridge University Press.

FREEMAN, JOAN E.
1956. "An Analysis of the Point Sauble and Beaumier Farm Sites," M. A. Thesis, University of Wisconsin.

LAUGHLIN, W. S. and J. B. JORGENSEN
1956. "Isolate Variation in Greenlandic Eskimo Crania," **Acta Genetica et Statistica Medica,** Volume 6, pp. 3-12.

SPAULDING, ALBERT C.
1953. "Statistical Techniques for the Discovery of Artifact Types," **Amercan Antiquity,** Vol. XVIII, No. 4, pp. 305-313.

DOMESTIC HOUSES AT AZTALAN

Warren L. Wittry and David A. Baerreis

One important objective of the recent archaeological excavations at Aztalan has been to add to our knowledge of the architectual features of the site. Although some information had been made available by the work of Dr. S. A. Barrett for the Milwaukee Public Muesum in the years 1919, 1920, and 1932, the actual house plans produced were not of the character that would allow the production of a precise drawing through which the houses might be reconstructed. If this site is to be rebuilt at some future date in a form which includes actual house reconstructions, the acquisition of such information is obviously a vital phase of the current research activities.

The excavation of house sites is a particularly interesting phase of archaeological fieldwork. Built as they are of perishable materials including wood and bark or thatch, the direct remains of such structures are rarely enccuntered. Only if the house is destroyed by fire and if fragments of the walls and roof were carbonized and buried, can we anticipate that details of the superstructure will be preserved. But despite this, holes or trenches that were excavated for the insertion of walls and roof supports can be found and the ground plan of the house mapped. The technique used here is the same, of course, as that used to map the stockade walls which originally surrounded the village. It is a fortunate circumstance for the archaeologist that when pits and post holes were excavated into the subsoil, these pits were subsequently filled with earth of a different color. Careful digging and scraping of the top of the subsoil at the site reveals the differences in soil color and excavation of pits and trenches provides us with information on shape and depth. When the archaeologist is in possession of the basic floor plans, even though direct information on the superstructure may be lacking a full reconstruction of the house is still possible. Although the people who occupied Aztalan do not survive into the historic period in the Wisconsin area, Indian tribes sharing the same general culture pattern elsewhere in the Mississippi valley and eastern United States did. By making use of the records of the early Spanish, French and English explorers as well as

early ethnographic descriptions, it is possible to match the ground plan of the house recovered by archaeological techniques with the accounts of houses still occupied by Indians in the historic period.

Early Excavations

In summarizing the work of the Milwaukee Public Museum at Aztalan, Dr. S. A. Barrett (1933: 82) indicates that the portion of the earthworks devoted to dwellings was confined in aboriginal times to the enclosure, and probably to that portion of it located along the river and within the innermost stockade line. He states that house sites were particularly numerous in the northeastern section along the immediate river front. An examination of the maps accompanying this report, however, reveals only two reasonably complete structures that may be identified as domestic houses. It should be kept in mind that at the time of the earlier excavation, the complete series of stockade lines had not yet been revealed so that some square or rectangular structures that might have been regarded as houses could in actuality be towers associated with a stockade line. Further, Dr. Barrett interpreted the multiple stockade lines as representing a contemporaneous pattern of concentric fortification walls. An equally plausible explanation is that the multiple stockade lines represent stages in the gradual growth of the village and that as the community expanded in size and old stockade walls deteriorated, new ones were built to replace the old and in a position that expanded the actual size of the enclosure. Whether the village is one that actually increased in size, or alternatively decreased in size with a shrinking population, is perhaps not fully resolved at the present time. Expansion to a period of maximum size is perhaps supported by the fact that wood is most frequently preserved in post holes that represent the maximum expansion of the walls. It is certain, however, that not all of the walls could have been contemporary during the occupation of the site. Some evidence to this effect is present in conjunction with the description of the new houses that were excavated, but it is most clearly seen in those instances where refuse pits and stockade walls occupy the same position, a situation

which is not common.

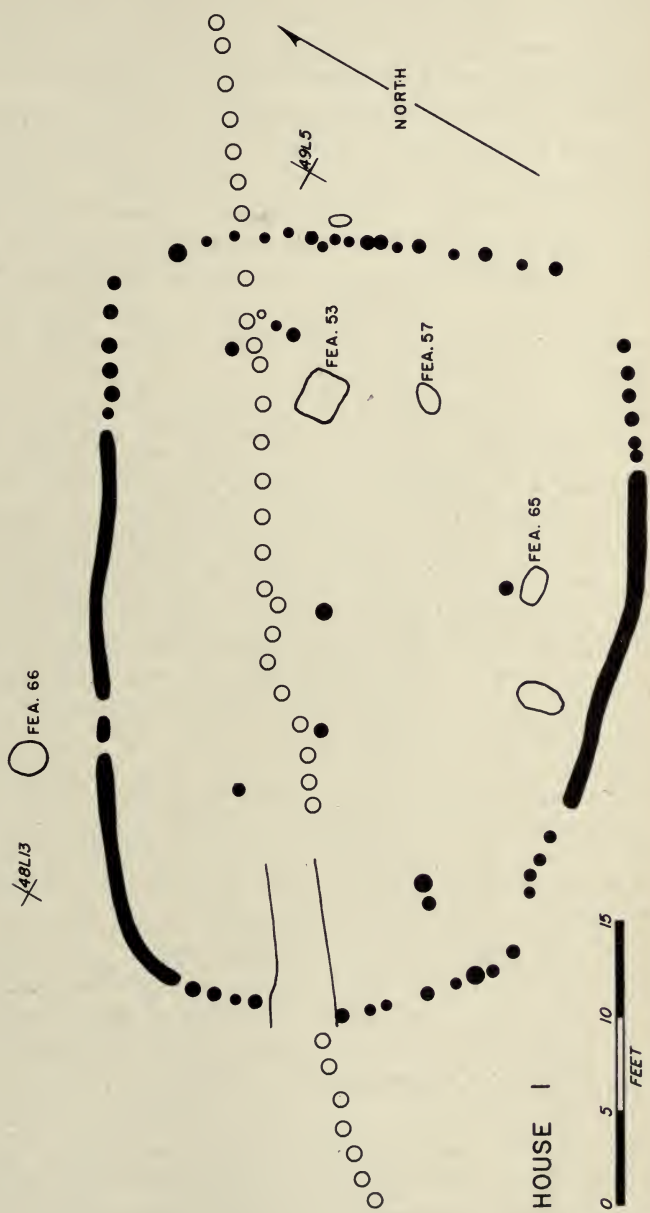
The two clear instances of houses recovered by Dr. Barrett are examples of houses of markedly different form. One house, located in Section IV (Barrett, 1933: 162-164) which is on the eastern side of the enclosure adjacent to the river, was an irregularly rectangular structure, measuring about twenty by thirteen feet in general dimensions. The shape would appear to be comparable to House 3 described in this report where it was possible to define the ground plan with greater precision. Additional post molds associated with the structure described by Dr. Barrett may indicate the superposition of several structures in this area. The second house, located in Section V (ibid: 175) which is also adjacent to the river but farther in the northeast corner of the stockade, represented a circular structure approximately twenty feet in diameter. Interpretation of the structure as a dwelling is complicated by failure to discover an entrance at any point.

Recent Excavations

In summarizing the early results of the excavations on domestic houses, it is obvious that additional work was clearly needed. The plans of three additional dwellings were produced as a result of the recent work of the Wisconsin Archaeological Survey. Even with these additional structures, it is clear that they represent only a small fraction of the total number which were once in use at Aztalan. Both in view of their diversity in form and in order to gain an estimate of the population of the village, more work on this aspect is clearly needed.

House 1

During the 1949 season the University of Wisconsin archaeological field school, directed by David A. Baerreis, excavated in an area where it was proposed to build a parking lot for the use of visitors to the site. Although it was subsequently decided to place the parking lot some distance east of the area where the excavations were conducted, the concern at this point was to explore each area prior to any construction work so that valuable archaeological data might not be lost. Among the several archaeological features discovered by the crew, the most important was the pattern of


NORTH
49L5
FEA. 53
FEA. 57
FEA. 65
FEA. 66
48L13
HOUSE I
0
5
10
15
FEET

post holes and wall trenches forming the ground plan of a house. The house was located in the vicinity of stake 46 L 9 of the grid system established by the Wisconsin Archaeological Survey, a location outside the main stockade line, about 250 feet south of Bastion G of the south wall. Thus an important bit of information established by this work. aside from the specific house plan recovered, was the establishment of the fact that the housestructures were not limited to the area within the stockade wall. Numerous refuse pits in the vicinity of the house added support to a continued pattern of occupation outside the walls during at least a portion of the use of the site.

The primary features of this structure (Figure 1) are its relatively large size, corner entrances, rectangular fire-basin, and the use of both single post holes and wall trenches for the construction of the walls. The plan was roughly rectangular with one corner rounded and three corners open. Maximum length was 40.0 ft. (northeast-southwest) and maximum width, 28.0 ft. (northwest-southeast). Diameters of the individual post holes ranged from 0.4 to 0.8 ft. and average 0.6 ft. The average width of the wall trenches, the technique used for portions of the northwest and southeast walls, was 0.8 of a foot.

Breaks occurred in the wall as follows: north corner 2.8 ft.; east corner, 4.5 ft.; and south corner, 2.5 ft. The west corner was completely closed. It would appear that the house had three entrances at the corners providing direct access in the directions of the creek to the south, the Crawfish River to the east, and the stockaded village to the north. The floor of the house had been completely destroyed by the plow, indicating that it had been approximately at the same level as the surrounding ground. Several isolated post holes were found inside the house. In all probability, these were directly associated with the house serving as supports for the roof or internal benches or racks. Feature 53. located in the center of the northeast end of the house, was a rectangular fire basin 1.6 ft long and 1.5 ft. wide, the bottom being slightly below the ground surface at the time of excavation. Three small storage and/or refuse pits were

located within the house and one was placed 2.5 ft. from the northwest wall.

The excavations also revealed a line of post holes running in a northeast-southwest direction through the house and continuing in both of these directions. There is no doubt that the line is not a part of the house structure and is an earlier or later feature at the site. No evidence was discovered to indicate which was the case, however, and it will remain for future investigations to properly place this line in the total picture.

The location of House 1 outside the stockade raises a question as to whether it was contemporaneous with the stockaded village or whether it might represent an earlier or later occupation of the site. The scanty material from the house itself together with the more abundant material from adjacent refuse pits contain the same range of material. including both Woodland and Mississippi sherds as the site proper. This would suggest that the occupation is contemporary with the main unit of the village. The presence of this isolated house, however, clearly indicates the need for a precise technique of analysis in both ceramic and non-ceramic artifacts that would allow the time of occupation within the total life span of the village to be established within close limits. In view of its size, light constructon, presence of several entrances and location, it might well have been a "summer house" and thus deviate for functional reasons for the more normal pattern of construction.

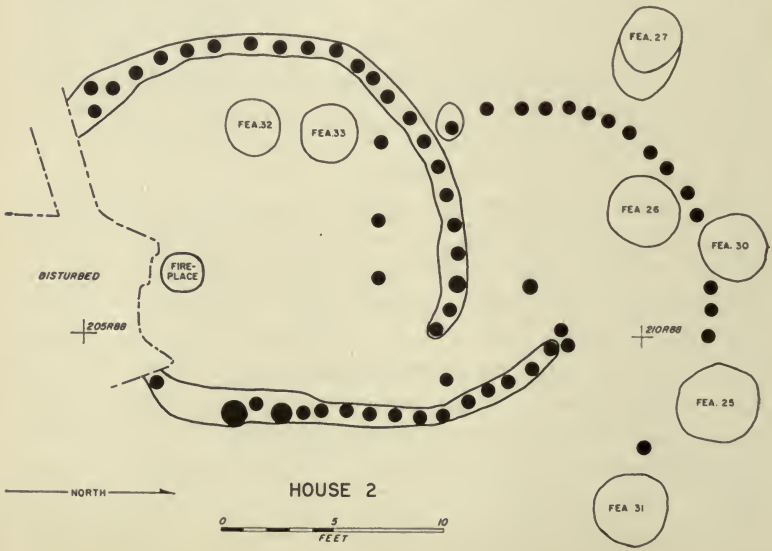
House 2

This house was found during the excavations of the Wisconsin Archaeological Survey at Aztalan in 1949. It was discovered near the east end of a long test trench running three-fourths of the width of the site in the vicinity of grid location 207R87. This is in the heart of the area where most of the Aztalan houses are believed to have been located.

The plan (Figure 2) was roughly circular, about 18 feet in diameter. The walls of the house proper were constructed of upright posts averaging 0.8 ft. in diameter set in a trench which varied in width from 0.8 to 1.6 ft. At the time of excavation, one of the post holes contained a section of a

tamarack post; another, a human femur which had been placed as a wedge to brace the post. At the entrance one wall was extended in such a manner as to provide an overlap, partially screening the opening. This opening, however, faced to the northwest and cold winter winds from that direction would enter in full force and rapidly chill the interior. In fact, due to the design of the structure, the winds could enter with such strength as to scatter the fire and endanger the contents of the house and its occupants. To prevent this, and possibly to provide privacy as well, a semicircular screen of posts set in individual holes was built which provided an opening to the east and a turning hallway into the main room. The possibility that the post holes of this screen were actually part of another house, the pattern of which intersected that of House 2, was recognized in the field and a special effort was made to detect the remainder of such a possible pattern. Since no post holes or trenches other than those shown in the figure were found, the semicircular wall is interpreted as being a part of House 2.

The three post holes near the north wall of the main room may mark the positions of supports for a bench or bed.



The fireplace was oval in outline (1.8 by 2.0 ft.) and extended 0.4 ft. into the undisturbed subsoil below the plowzone. As in House 1, the plow had also removed the floor indicating that originally it was at the same level as the surrounding ground.

The south side of the house had been disturbed by recent digging. The marks of steel shovels were noted and because of the location and outline it seems clear that it is the unnumbered trench of Dr. Barrett located just west of his trench numbered 19 in Section III. It will also be seen from Figure 2 that a series of storage and/or refuse pits were found within and in the vicinity of the structure. While two of these (Feature 32 and 33) could have orginally served as interior storage pits, it seems clear that others (Feature 25 and 30) which interrupt the continuity of the screening wall are probably later than the structure. A similar problem of culture analysis confronts us at this point as was indicated in connection with House 1. A gross classification of Woodland and Misissippi pottery types will not serve to differentiate time differences at this fine a level.

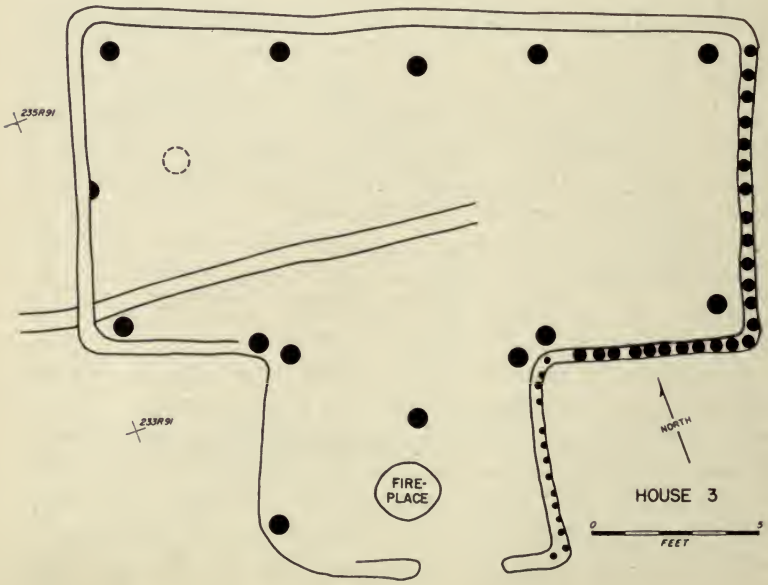
House 3

Additional test trenching in the intensively occupied area during the summer of 1950 revealed several previously unknown stockade lines and the remains of the third house found during the recent work. The approximate grid location was 233R93. At this point the plow zone was rather thick (1.1ft.) indicating that at one time there existed a slight depression which gradually filled in over the years. The presence of a house was suspected when quantities of charred wood and "Aztalan brick" were found in a rectangular area just below the plow zone. At a surface depth of 1.5 ft. the area had a regular outline containing the charred remains of several wall posts that had fallen in toward the center of the structure in a line perpendicular to the walls. After mapping the positions of the charred timbers at this level, excavation was carried downward in an effort to find the floor which surely would lay below the fallen timbers. No definite floor that could be traced from wall to wall was found. Instead, numerous layers of silty clay were

encountered which could be traced over larger areas within the house. These thin laminations were entirely free from cultural materials, and had the appearance of having been deposited by water.

The plan of the house (Figure 3) was made at a level of 2.4 feet below the surface at the time of excavation. This depth is believed to be an inch or two below the original floor of the house. Accordingly, this was a shallow pit house with a floor about 2 feet below the surrounding ground level. During occupancy the floor was kept clean for no nonperishable materials were trampled into it. The well burned surface of the fireplace indicates the house was occupied for a period and then abandoned. Standing empty for some time, water-born sediments were laid down in several layers on the floor. Finally, the house burned.

The main part of this house was rectangular room 10.5 ft. by20.5 ft. Entrance was gained through an anteroom 9.0 ft. wide and 6.5 ft. long. The wall of both the anteroom and the main room were marked by a continuous wall trench 0.5 ft. wide, the only gap being the 2.5 foot-wide doorway. Portions of the south and west wall trenches of the anteroom



were not well defined in the soil but, in all probability, were constructed in the same manner as the east trench of the anteroom.

The positions of the wall posts are shown in the figure where they were clearly visible. Doubtless, posts were once similarly placed in the north, east, and south wall trenches but their exact positions could not be determined. The wall posts of the main room were 0.4 ft. to 0.5 ft. in diameter. Those of the anteroom were 0.2 ft. in diameter and were bent so they formed the roof as well as the walls. A charred curved section 4 ft. long was traced directly to a post hole on the east wall of the anteroom while half a dozen 3 ft. lengths were scattered haphazardly within the anteroom. We may conjecture that the walls and roof of the anteroom were covered with bark in the fashion of a wigwam. In contrast, all of the charred wood sections found in the main room were straight and evidence for a wattle and daub treatment of these walls was found. The fireplace was located in the center of the anteroom. It was an oval basin-shaped pit, 1.75 by 2.0 ft., with an estimated depth of 0.5 to 0.6 ft. below floor level. When the fireplace was discovered it was thought it might be possible to find the house floor by tracing the floor adjacent to it outward from this center. The attempt was unsuccessful.

Interior supporting posts, 0.6 ft. in diameter, were arranged in a definite pattern as shown in Figure 2 adjacent to the walls of the long axis of the building. These supporting posts may well have supported a horizontal beam upon which a gabled roof would rest.

An east-west wall trench containing no evidence of post holes within it ran through the house but was definitely an earlier feature since it was intersected by the house wall.

Comparisons and Conclusions

While the discovery of three additional domestic houses adds substantially to our knowledge of the architecture of Aztalan, the diversity in form represented provides few clues as to the "typical" house form of the settlement. The very diversity in pattern, of course, may well be in keeping with the cultural situation reflecting the mixture of Woodland and

Mississippi traditions. The diversity in house type is not confined to aspects of form but may be reflected in construction methods as well. The evidence suggesting a gabled roof construction for the main room of House 3 has been presented. House 1 and House 2 lacked the interior supporting posts and in these instances a building technique in which the wall posts were bent over near the top to form a roof seems possible.

To return to the initial question posed in this section, that the diversity in house forms may reflect a fusion of the two basic culture patterns found at the site, comparative evidence from other sites might throw light on the situation. The nature of the basic Mississippi house pattern can best be seen through an examination of other sites of this culture pattern. A brief survey of the nature of some of this evidence is presented below. Unfortunately, no evidence for house types for other archaeological complexes in Wisconsin is presently available. Comparisons must therefore be made with regions beyond the border of the state.

Aztalan is classified within the Monk's Mound aspect of the Middle Mississippi phase and it would be logically within this aspect that the greatest resemblance in house pattern should be found. However, unlike other Middle Mississippi cultural units, relatively little information has been reported on the domestic architecture of this group. Even at the important site of Cahokia, one of the primary centers with which direct connections with Aztalan have been postulated (Barrett, 1933: 370-1), this part of their culture has received little attention. Some information, however, is available from the Fouts Village site (FV664) in Fulton County, Illinois, a component which is placed in the Spoon River focus, Monk's Mound aspect of the Middle Mississippi phase (Cole and Deuel, 1937: 111-120). Four houses were excavated at this site, in each instance with the floor depressed about 1.8' below the level of the surrounding surface. The house outlines were rectangular, roughly 16 x 22 feet in dimensions, with the walls being represented by wall trenches. The corners of the wall trenches were both open and closed but it is assumed that the open corners did not represent entrances

but rather that a side entrance pierced the wall and served as an entryway. No direct evidence on this later point was secured, however. The wall trenches did not contain clear evidence of post molds, the occasional post present being a regular component portion of it. Walls are thought to be straight and of bark slabs or brush because of the absence of burned remains of wattle-and-daub construction. The fireplaces were discerned as areas of hard-burned colored soil usually located near the center of the structure. Storage pits were present within the houses and immediately adjacent to the houses. Some interior supporting posts were present but not in any regular pattern. Another distinctive feature was the presence of a low enbankment of earth outside the house walls.

The comparative material on house type from the Fouts site has been described in detail since it is a component of the same aspect in which Aztalan is placed. In view of this, the contrast provided by the unformity of house patterns is striking. It might be noted that fifteen house depressions were noted at the Fouts site and if this is the presumed maximum size of the village, the sample of four houses actually excavated should be adequate to reveal the range in form of structure. A total of fifteen houses, however, is probably relatively small in comparison with the situation at Aztalan so that it may be that the differences between the sites should in part be attributed to an occupation of shorter duration at the Fouts site resulting in lessened variability.

Much more satisfactory is the information available for another, but more closely related, aspect within the Middle Mississippi phase. For this aspect the name Tennessee-Cumberland has been proposed and two foci have been suggested: (1) the Kincaid focus (the components being Kincaid, Angel, Tolu and Wycliffe); and, (2) the Gordon focus (with Gordon, Fewkes, Williams, Duncan, and Glover as components) (Cole, et al., 1951: 229). This aspect is described as having its main distribution east of the Mississippi River from above the mouth of the Ohio to the region around Nashville, Tennessee. The Kincaid and Angel sites being the most northerly in distribution, might perhaps be expected

to most closely resemble the complex found in the Monk's Mound aspect and comparisons are limited to these two sites.

The results of extensive excavations by University of Chicago field parties at the site of Kincaid between 1935 and 1944 are summarized in the publication, **Kincaid: A Prehistoric Illinois Metroplis** by Dr. Fay-Cooper Cole and others (Chicago, 1951). It is difficult to obtain an adequate impression of the total range of domestic structures found at the Kincaid site, but a summary of the changing pattern of houses given in conjunction with the analysis of excavation unit Mx°4 (pp. 73-74) is perhaps representative of the site. The early period of occupation is represented in general by houses that were rectangular in form and small, about 10 by 15 feet in dimensions although one structure measured 15 by 22 feet. Small posts formed the walls and were set in wall trenches from 6 inches to 1 foot in width. Corners of the houses were open and evidently served as entrances. One circular house with a central fireplace, interpreted as a possible sweat lodge, was noted. Other houses do not have central fireplaces and only one was noted which had been placed in a shallow pit. In the subsequent middle period a trend toward wider wall trenches are noted and some corners of the houses are closed. Single and double fireplaces are both within the houses as well as outside them. Houses with central pillars are now noted in about equal numbers with those lacking them. While two square structures were found, the rectangular form is still the characteristic one. Small medium and large houses are present in about equal numbers. This period also contained both a circular house and one set in a pit. The late period was characterized by large houses with all four corners closed. The nature of the entrance in these latter houses is not described, although in other units a simple break in the walls at one end of a long side served this function.

While the Kincaid houses show a clear relationship to those of Aztalan in both form and their component features, it is perhaps the very diversity in form which has the closest parallel to the Wisconsin situation. No structure precisely

comparable to House 3 is described in the report.

For the Angel Site in southeastern Vanderburgh County, Indiana, the last of the Middle Mississippi sites to be included in our comparative survey, we must depend upon a preliminary report on the excavations prepared by Glenn A. Black of the Indiana Historical Society (Black, 1944). The extensive excavations at this site provided abundant information on house form and clues as to the manner in which they might be reconstructed though at present the range in variation at the site is not available in published form. They were substantial structures of logs, cane, mud and grass and the details are so well presented by Mr. Black that an extensive quotation from his report will perhaps serve to clarify construction details for the Aztalan situation.

" Ordinarily, when a house was erected, trenches were excavated into the subsoil to outline the intended four walls. Small logs were placed upright within the trenches and earth packed around them to hold them firm. These vertical logs are comparable to the studding of modern wooden houses. After the logs were in place, split canes were tied to both inside and outside surfaces. The canes compare with the lath in our houses. Roof rafters were added next, probably at a very steep pitch. Smaller poles were tied at right angles to the rafters, and to these poles were tied the tufts of grass which formed the thatch roof."

"The walls were completed by plastering the cane "lathing" with mud mixed with straw. We have some evidence to indicate that either the inside or outside wall surface was covered with cane mats, and that some house walls even had designs painted upon them."

"The door was not specialized in any way that can be determined from the evidence at our disposal. It is probable that the entry consisted merely of an opening in one of the walls—an opening made at any one of numerous places where the log walls were spaced far enough apart. There is historical evidence that similar houses in the southeast had very narrow doors of this sort. There is no record of windows in such house — we find no evidence one way or another on that point. Historically and traditionally such houses had only

two openings, the door and a hole in the roof through which smoke from the centrally located fireplace could pass."

"Small stake and post holes around the inside walls and at random over the entire floor of the houses probably mark the presence of interior furniture, such as it was. Benches were sometimes elevated above the floor and covered with canes and grasses; they served as beds at night and seats by day. Poles were erected inside the houses upon which could be hung ceremonial objects and other personal accouterments.

"Fireplaces found here are rather well-made affairs and always in the exact center of the house floor. They are basin shaped, formed of puddled clay, and of course burned to the point of near vitrification by long use. The rims of the fireplaces extended above the floor and were usually neatly rolled. Within the basins of some are evidences of repairs to cracks and burned-out spots. Sometimes one fireplace is found within another, indicating that the older one had become unserviceable and that a new one had been formed within it. In some houses two fireplaces have been found side by side, and in one house there were three, arranged in a triangular pattern in the center of the floor."

"In the larger houses four roof supports were placed about midway between the walls and the center of the house. These posts when found were always larger than those composing the house walls." (Black, 1944: 485-6).

The size of the houses at Angel varied from 18 feet square to 42 feet square with no mention made of rectangular or circular houses. While they also differ in terms of some specific detail, as in the uniform fireplace pattern, the method of wall and roof construction abundantly supported by local evidence doubtless applies to some of the Aztalan houses as well.

It is clear from this brief comparative survey that considerable variability in domestic architecture is to be found within components of the Middle Mississippi phase. For the specific details of domestic architecture at Aztalan, additional local evidence is needed. The technique of house building, however, provides enough uniformities to allow

evidence to be drawn from external sources to improve the accuracy of an Aztalan reconstruction. The diversity in house forms at other Middle Mississippi sites indicates there is no logical reason why all of the house types found thus far at Aztalan could not have been made by the Middle Mississippi peoples.

BIBLIOGRAPHY

BARRETT, S. A.
"Ancient Aztalan," **Bulletin of the Public Museum of the City of Milwaukee** Vol. XIII, pp. 1-602, 1933.

BLACK, GLENN A.
"Angel Site, Vanderburgh County, Indiana: An Introduction," Indiana Historical Society, **Prehistory Research Series,** Vol. II, Number 5, 1944.

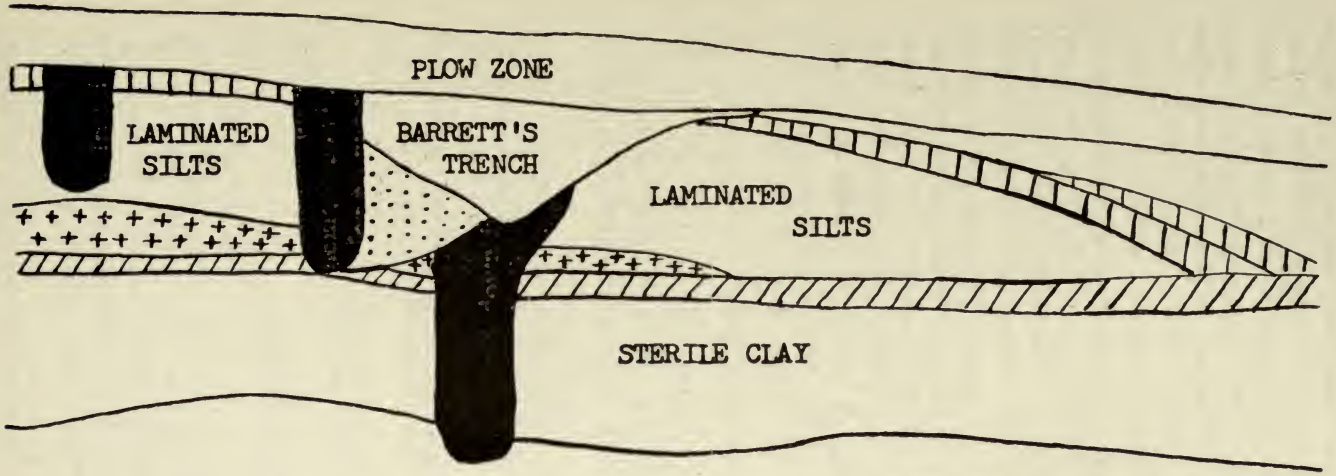
COLE, FAY-COOPER and THORNE DEUEL
Rediscovering Illinois. Chicago, 1937.

COLE, FAY-COOPER, et al., KINCAID
A Prehistoric Illinois Metropolis. Chicago, 1951.

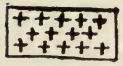
THE EXCAVATION AND RECONSTRUCTION OF THE SOUTHWEST PYRAMIDAL MOUND AT AZTALAN

Robert F. Maher

Archaeological investigations at Aztalan were continued during the summer of 1951 under the sponsorship of the Wisconsin State Department of Conservation and the Wisconsin Archaeological Survey. Additionally, it was determined that this season would see the first efforts toward a planned reconstruction of the site. Of the units involved in the basic structure of the village, the large southwest pyramid mound was decided upon as most appropriate for the initial restoration work. Some information concerning the original structure of this mound was already available in the reports of Hyer (1837), Lapham (1855), and Barrett (1933). Of these, however, only Barrett had attempted excavation, and this concerned only certain features of structure. Accordingly, it was decided to use the first part of the summer's time and funds for research excavation of the mound in order to substantiate the earlier sources and to seek answers to more specific questions about the mound's nature and structure. Then, with this preparation, the latter part



BUFF COLORED CLAY


GRAVEL

OLD SOD LINE

ABORIGINAL TRENCH

POST MOLD

Scale: One inch equals two feet

FIGURE 1 - PROFILE SECTION OF SOUTH FACE OF WEST TRENCH IN THE SOUTHWEST PYRAMIDAL MOUND AT AZTALAN, ILLUSTRATING THE PRINCIPAL STRATA AND THE POST MOLD REMAINS OF SUPERSTRUCTURES

of the field season was to be devoted to a reconstruction, as authentic as knowledge allowed.

Both Hyer and Lapham described the southwest mound as it appeared in their time, and both indicated a pyramidal structure which was stepped and truncated. By the time of Barrett's excavations, however, this evidence had disappeared under cultivation, and only an evenly contoured mound remained. But his investigation did reveal the post mold pattern of a nearly square structure on what seemed to be the summit of the earthwork. With this information as a guide, the 1951 excavations were designed to investigate more specifically the nature of the mound structure and the conditions which might be connected with Barrett's superstructure. Particular attention was given to evidence which might confirm the accuracy of the earlier reports, indicate temporal relationships between the various features of the structure, and give some clues as to function.

With this orientation a party was sent into the field for the months of July and August under the direction of the author, with the collaboration of Warren L. Wittry during the first month. Other members of the excavation party were Arnold Hanson, George Holcomb, Lawrence Littig, and Arthur Niehoff. Represented in this group were the Public Museum of the City of Milwaukee, the Wisconsin State Historical Society, and the University of Wisconsin. Aside from the field party, the summer's operations were aided by advice from Dr. David A. Baerreis of the University of Wisconsin and Dr. Chandler W. Rowe of Lawrence College on matters of excavation and Mr. Clyde Smith and Mr. Lowell Hanson of the State Conservation Department on reconstruction problems. All of these individuals visited the site on more than one occasion during the summer

Time and the size of the crew dictated a decision to employ machine equipment in some gross aspects of excavation, as well as in reconstruction, where the need was obvious. Accordingly, a ditch-digger was hired to excavate trenches thirty inches wide and to whatever depth necessary to produce adequate profiles of mound structure. Before this work could proceed, however, the grid system employed

in the two previous seasons had to be re-established. Attempts at this immediately encountered problems. Of the six permanent stations set at the end of the 1949 season only stations one on the top of the southwest mound and six on the northwest mound could be located. Although a transit was brought to bear on recorded azimuths, the other points were not discovered, due to an exceptionally heavy growth of alfalfa and the possible removal of station three. Although triangulation from stations one and six could theoretically have served to re-establish the old grid system, the absence of readings from other stations which could serve as a check on accuracy threw favor to another method. Operating with Wisconsin State Conservation Department's transit number 33059, station six was found to be at a magnetic north bearing of 15 degrees 23 minutes from station one. This angle, when determined by trigonometric function (slide rule accuracy) and using measurements taken directly from Maxwell's map of 1949, was 14 degrees 6 minutes east. From this was derived a correction of -1 degree 17 minutes on the instrument's north reading, arriving closely at the

Figure 2. Restored Southwest Pyramidal Mound.

original Wisconsin Archaeological Survey's grid north. Useing this corrected bearing and additional measurements from the 1949 map, coordinate 154L34 was located thirteen feet west and eleven feet north of station one. To prevent a recurrence of this problem in future seasons, it was considered advisable to establish several additional permanent stations directly on the grid. This was done by driving three foot lead pipes two feet into the ground at 154R14 and 154R64. In addition, the metal and concrete marker at station one was relocated at 154R94, after excavation made necessary its removal from its original position on the southwest mound.

Employing this location of the grid, stakes were set by instrument at twenty foot intervals on an east-west line at 154 and a north-south line at L34. These intersected at 154L34, near the summit of the southwest mound. With transit set at that point elevation readings were taken at two foot intervals along the staked grid lines to find whether or not instrument precision might reveal contour changes connected with the mound's original shape but not apparent to the eye. The resulting profiles, however, produced no clues to prehistoric conditions.

The decision to employ machine equipment at this point was one of calculated risk. While it was recognized that some information might be lost, the facts that the mound seemed to not be in the area of concentrated village remains and that knowledge of its structure and function was the prime target of the summer's investigations indicated that more information might be gained than lost through the use of a ditch-digger in excavation. Accordingly, trenches were machine-dug into the mound from the four cardinal directions and along the grid lines already staked. Designated by grid symbols, the trenches excavated extended from 158L34 to 178L34 (100 feet) on the north, from 154L32 to 154L6 (130 feet) on the east, from 152L34 to 134L34 (90 feet) on the south, and from 154L35 to 154L50 (75 ft.) on the west. The east and west trenches were excavated along the north side of the 154 line and the north and south trenches to the east of the L34 line. All were thirty inches wide and varied in depth from four to six and one-half feet, with the greater

depth occuring in each case at the end nearest the center of the mound. The result, then, was a total of 395 feet of trenches converging on the center of the mound from the four directions, but separated by an untrenched area at the summit of thirty feet north and south and fifteen feet east and west. Since it was this area which might be expected to disclose remnants of super structures, it was considered best to attack it through hand excavation. Once dug, the trenches were cleaned and scraped by shovel and trowel and profiled in detail at a scale of one inch to the foot.

Although some data was undoubtedly lost, the profiles from the machine-dug trenches, which took only one afternoon to excavate, more than justified the procedure. To judge by the scanty yield from careful hand excavation of the mound's summit and from the barrenness of the trench dirt piles, it would seem likely, that, artifact-wise, little was lost. Certainly from the point of structural information the technique produced heavily on the credit side. The only known exception here being the unfortunate fact that the east trench ran throught the point at which the stockade line, located by Barrett on the northeast face of the mound, approached the post mold pattern of the superstructure he had previously excavated on the top of the mound. Whether or not these two joined and were contemporaneous, as Barrett's account would seem to indicate, or whether some other situation held, would have been significant to record. Only one other point of damage can be maintained, in that the south trench disturbed and partially destroyed a flexed burial (burial 201) in square 146L34. Fortunately, however, part of the skeleton extended into the untrenched part of the square, and information concerning its provenience and arrangement could be obtained. The soil profiles involved showed the burial to have been intrusive into what was later determined to have been the relatively level terrace of the platform mound.

Whatever story is to be obtained from the excavation of the southwest mound lies in the defined strata, the post molds, the pits, and, in particular, in the relationships between them. Although the descriptions of Hyer and Lapham were available and agreed in essentials, it was considered as more

likely profitable to first examine the 1951 data separately, so as to form some independent interpretations of that material, before seeing how it fitted into the general mold of the earlier information. For the purposes of this discussion the principal elements involved will be separately described and then their relationships discussed and some attempts at interpretation of meaning brought forward.

The Strata

In all of the trench profiles an old sod line representing the contour of a natural hill appears well defined in all places where it is not broken by aboriginal activities. This line should prove a logical point of departure for descriptions of the strata which the trenches encountered above and below it.

The line, itself, is continuous in the east and west trenches except for minor intrusions by the posts of Barrett's structure. The picture presented here is one of a spur, extending out from the terrace, which runs along the western edge of the site, and displaying a more gentle contour than the surface of the mound at the time of excavation. Both of the large mounds at the site are associated with this terrace. Quite apparently the natives made use of its elevation above the village proper to give an initial height to the earthworks they constructed on it.

Below this old sod line are first a stratum of red clay, averaging about one and one-half feet in thickness, and then a level of sandy gravel of unknown depth. These strata are completely sterile and are of interest here only where they are intruded upon by what would seem to be activities of the site's prehistoric inhabitants. These intrusions will be considered under the subjects of pits and post molds and the relationships between features.

Above the old sod line are three strata easily discernable in all of the four profiles. In all cases the one encountered first above the old hill surface is a layer of gravel, varying from two tenths to one and one tenth feet in thickness. Horizontally, it presents the greatest dimensions of these three significant upper strata. Although broken in places, this layer, as seen in the trench profiles, measures about 85

feet east and west and 70 feet north and south, with its greatest extension in the east trench, reaching out from the natural terrace toward the village proper. In general it seems to rest directly on the old soil level.

Above the gravel is a more regular bed of thinly laminated silts, which contributes to the summit of the mound. Several features here seem significant.

1) The layered structure of the level gives the impression that it was built up in a number of stages, each involving the depositing and rather even spreading of small amounts of silty soils. If this interpretation is correct, it is still, of course, impossible to tell with any precision the lengths of time which might have elapsed between building stages. But aside from tthe evident banding, this stratum is rather homogeneous, with the surface of none of the including bands showing any particular signs of weathering, accumulation of cultural debris, or other indications of having stood exposed for any length of time. It is suggested here, then, that the building up of this stratum appears to have been in stages, but in stages which followed closely upon one another in point of time.

2) The horizontal dimensions of this layer, as it appears in the four trenches, are almost the same from east to west as from north to south, being from 60 to 65 feet at the base of the layer and about 50 feet at its upper measurement. The limits of the latter were more difficult to determine, however, and that figure must be considered as somewhat more arbitrary. This description, though, points to one of the more significant features of the stratum. Its upper surface is the smaller dimension and at its outer edges strike downward to join the lower limit of the layer at an angle independent from that of the surface of the mound as a whole. The angle of the laminated layer is the sharper, and the total effect in profile is that of a low truncated pyramid, resting on the lower gravel layer, yet covered by earth above.

3) The location of the laminated stratum as a whole centers approximately below the summit of the mound and contributed to the value of the elevation at the time of excavation. Its own thickness, however, was greatest in the

north, south and east trenches. These are the excavations exposing the slopes of the elevated natural spur on which the mound was constructed. While the west trench involves the terrace of which the spur is a part. And it is here that the laminated layer, and the gravel bed below, as well, are thinnest. Quite apparently these levels were laid down not only to increase the natural height of the spur, but also to create a more level surface at the new height or heights.

The third important stratum lies directly above the laminated silts. This layer is a sometimes reddish but more often buff colored clay, which has a horizontal distribution similar to but somewhat exceeding that of the silts. As the clay is traced beyond the centrally located silt stratum, it bends downward, and on the east becomes separated from the lower gravel layer by a level of gravelly loam, while on the west it meets the old sod line and rests on this for a short distance before disappearing. On the north and south the clay behaves similarly, sloping down with the silt level, but above it and extending beyond it. The situation of under-lying strata, however, becomes more complicated here, due to what appear to have been aboriginal excavations. This will be discussed later.

An examination of the clay level brings out another interesting point. The mound, as has already been mentioned was cultivated for some years, a condition which undoubtedly reduced its size somewhat, particularly at the summit. In addition to this, however, Barrett states (p. 225) that early settlers made special efforts to level the pyramid in order to make cultivation easier. Just how much the mound has been reduced is immpossible to tell, although some suggestions will be made later. But the profiles can be helpful in attempting to reconstruct the original situation. The basic clue here is in the clay level. It varies from three tenths to eight tenths of a foot in thickness and was clearly below the 1951 mound surface in all but the west trench. Here it was apparent that the mound had been cut down until part of the clay stratum had been destroyed. This does not necessarily mean that more earth was removed from the western side of the mound, for it must be remembered that

it was on this side that the natural elevation was highest. But because of this, less earth was needed to build up the west side of the pyramid, and while all of the important strata are here, they tend to be less thick. Hence any cut would likely remove more of the relative profile than it would on any of the other sides. This evidence points up the sloping nature of the hillside, with which the prehistoric builders had to deal in attempting to build up an impressive but level surface as the base for the construction of perishable superstructures. And datum measurements on the principal strata, as they could be observed at the time of excavation indicate that such a level was quite prabably not achieved until the laminated stratum had been laid down. This is a point which will be returned to.

Because it was greatly disturbed and to some unknown extent destroyed, little can be said about material above the clay zone except that the original mound almost certainly did not end there. These upper levels or what remains of them, appear most clearly in the western end of the east trench, that is, the end of that trench which is nearest the mound's center. Here are found short bands of, first, a light grey silt, two to four tenths of a foot in thickness, then a light red silty loam, three to six tenths of a foot thick, and finally a light grey silt, measuring four to six tenths of a foot. Above these is plow disturbed soil, averaging about seven tenths of a foot in depth.

During the course of his work at the site, Barrett sank a pit near the summit of the southwest mound and recorded some of the soil profiles which were exposed. These are difficult to synchronize with the ones obtained in 1951, partly because they report only a small area and partly because his excavation was concerned with investigating a pole which had been placed near the center of the mound. Very probably the soil around the pole was disturbed by the people who placed it there, confusing the relationship of the profiles to the general mound structure. It would appear from Barrett's text, however, that he did not correctly identify the original slope's sod line. He states that at the time of his excavations the pole which was encountered extended down to a point eleven

feet below the existing summit. He adds that it reached seven and one half feet below the level of the platform or first terrace structure of the original mound but did not penetrate the natural surface. An examination of the 1951 profiles, where they apply to the general area of Barrett's pit, suggests that his interpretation of the platform level is correct. His figures place it at three and one half feet below the mound surface at the point of his excavation. This agrees closely with the 1951 interpretations. But his implication that the first terrace or platform structure was built up at this point by more than seven and one half feet of artificial earthwork is sharply contradicted by the later profiles. Barrett's pit was within the limits of the post mold pattern of the structures he discovered on the top of the mound, a pattern which appears clearly in all of the 1951 trenches. The vertical profiles of the soil underlying this structure unmistakably show the original sod line as being nowhere more than five feet below the 1951 mound surface and indicate that the terrace or platform was built up within this central area by not more than two feet of artificially deposited earth. A view that the elevation of the mound may have been appreciably reduced by cultivation since Barrett's time and thus have altered the effect of his figures does not seem likely. Since the outline of his excavations, including the relatively shallow trenches which traced the summit's post mold pattern, all appeared sharply in the 1951 investigations. In any case, his implications concerning the patform's thickness at this region near the center of the mound involve figures about internal structure, which could not have been greatly affected by whatever mound reduction that might have occurred.

Pits and Other Aboriginal Excavations

A number of pits were uncovered, both in the trenches and in the later excavations involving the top of the mound. The vertical placement of these is particularly interesting, since it gives some indication of which levels in the mound structure served as open surfaces at various times. In all, twelve definite pits were encountered, with time allowing the excavation, partially or entirely, of only eight. Three of the unexcavated pits, however, were profiled by the trenches, giv-

ing some of the more important information involved in the mound pits. Pit excavation, without exception, was relatively unproductive in terms of artifacts. In some cases a few potsherds were recovered, but these were always small in number. Three pits (features 206, 207 and 211) contained no pottery whatever, although small amounts of shell and charcoal were present. Generally speaking, the pits were alike in containing little refuse and having a dark silt or loam fill. Most were bell-shaped and fairly large, varying from about 2½ to 5½ feet in depth from their surface or origin. Width-wise the range was from two feet eleven inches in the case of feature 209 to six feet in feature 212. Size and shape did not show any consistent variation with stratigraphic placement, and the small amount of cultural material recovered will probably not allow any significant statements from that area. As has been mentioned, however, the pits do indicate which structural levels of the mound stood open for any length of time, and in this way point to major building stages. The evidence is summarized below.

1) The lowest pit in terms of the stratum from which it was dug is feature 219. This pit originates from the natural soil level and is covered over by the gravel layer. The fill of this pit is sand and gravel, indicating that it was probably open and relatively empty at the time the overlying gravel stratum was laid down and received its fill from that operation.

2) Three pits were dug after the gravel had been spread but before the laminated stilts were built up. These are features 204, 209 and 212. Feaure 212 was the largest and most centrally located of the mound pits. It significantly produced a few kernels of charred corn but little else in the way of refuse materials.

3) Apparently no other pits were dug in the central mound area until the layer of laminated silts had been completely laid down. After that was done, three pits (feature 202, 208 and 211) were excavated. None of these show any divergences from the range of pattern established by the earlier features.

No pits were observed to originate at or above the buff

clay stratum. The five remaining pits were features 205, 206, 207, 220 and 221. Of all pits encountered, feature 205 was the only one neither excavated or profiled. In spite of this, however, it was possible to note that the buff clay layer was unbroken by this pit, and that it must have had its origin from some level below that. Features 207, 220 and 221 were excavated in areas removed from the central mound structure, making their temporal placement less definite. All that can be said here is that these pits were dug from near the 1951 surface and very probably from the original level of the platform mound. Feature number 206, however, does present some interesting stratigraphic features. Apparently it was dug after the gravel had been deposited, and, then, after some unknown period of use, became filled with a dark silt containing a few clam shells. After this, the stockade structure identified by Barrett as running up the northeast side of the mound was consructed, and the trench involved in the foundation of this feature clearly cuts through the fill of feature 206. So one gets a sequence of, first the gravel bed, then the feature 206, and finally the stockade line. This stockade pattern was also investigated for possible supports for a runway which might have run near its top, but evidence was negative.

All of this supports the original definition of important strata. Apparently the mound was not constructed until the site had been occupied for at least a short time. The first building stage involved primarily a gravel layer designed to surface parts of the original hill and to build up its lower slopes to a level near that of the higher. On the east, north and south near the outer limits of this primary platform, where the greatest earth building was necessary the gravel bed seems to be supplemented by a lower sandy loam. The picture in these areas, however, is far from clear, and the outer construction and extent of the platform are difficult to precisely determine from the trench profiles. In any case, this platform stood alone for a period of time long enough to allow the excavation of several large pits, which in 1951 cntained little except dark soil fill and in one case some charred corn. This evidence would seem to indicate that these pits, and most of the others in the mound, were used for food

storage. In addition, since this must have been a community built structure and probably served a community function, it seems likely that the storage pits connected with it were also involved in a communal collection of food supplies. At some later time another structure, consisting initially of a series of silt strata laid down in the form of a truncated pyramid was consructed on the platform. After this came another pause in construction activities, as is indicated by several pits dug from this level. The next activity covered the truncated pyramid with a layer of clay. It is possible that it was at this or the preceeding stage that Barrett's structure was placed on the top of the mound, although this cannot be said with certainty. Almost certainly there was one or more building phases after this, which added to the height of the truncated secondary mound, but little can be said about them on the basis of the soil patterns which remained in 1951. This will be returned to, however, after a discussion of the post mold patterns uncovered.

In the previous text, some references have been made to aboriginal excavations which seem to have been something other than storage or refuse pits. They are considerably larger and more irregular and appeared only in the profiles of the north and south trenches. In both cases the picture is confused and interpretation difficult. Certain consistencies do, however, appear. In the north trench the excavation begins about the northern limit of the laminated silt stratum and extends outward for about seventeen feet. While in the south trench the disturbance extends southward from the southern limit of that bed for a distance of about twenty-two feet. In the latter case the profile of the excavation is clearly broken by the pit containing burial 201. In each case these features break the old sod line and extend through the sterile basic clay stratum into the gravel and sand layer which underlies it. Although the situation is not plain, they can in no case be seen to intrude upon the artifical strata of the mound, and most certainly the red and buff colored clay level is unbroken by them. In addition, the laminated silt layer tends to extend slightly over the inner edges of these disturbed areas, and at one point in the southern trench a lens

of what is possibly the gravel stratum appears above the prehistoric excavation. Although nothing can be said with confidence, a possible interpretation of these disturbed areas can be advanced. First of all, they seem early and may have been dug before any of the artificial features of the mound were constructed. And second, in each case they are irregular but extend down through the basic clay into the sand and gravel bed below it. These observations suggest that the intent behind the prehistoric excavations may have been to obtain gravel and sand and may have been the source of the materials used in building up the platform. If this rather tenuous interpretation is true, then these features represent an initial stage in the series of activities which were involved in the construction of the pyramid.

Post and Trench Molds

Most of the post remnants and molds encountered belonged to the pattern excavated by Barrett. This pattern and the outlines of Barrett's trenches were quite clear and indicate the remains of a nearly square structure which once stood on the summit of the pyramidal mound at one stage in its construction. Beyond this, however, the situation becomes complicated on a number of points. For one thing, it is impossible to know precisely the level on which the structure was built. Barrett's trenches destroyed the upper sections of the posts and molds as they existed at the time of his excavations, so the 1951 investigations were able to deal only with the pattern as it appeared at some unknown distance below the level on which its connected structure rested. Wherever it was observed in cross section, Barrett's excavation went through the upper buff stratum and into the level of laminated silts. This may indicate that he did not find any mold traces on the clay level and that the structure was built on the laminated silts, but one cannot be certain, since his report does not consider this question. Evidence which seems to support this interpretation, however, can be found in the vertical profiles of the laminated area. In each of the four profiles, the upper surface of the silt stratum is level over the area which includes the mold pattern and presents its downward slope immediately outside of the pattern. In other words,

the area encompassed by the mold patterns is the level upper surface of the laminated bed.

Other complications are found in the presence of additional trench and post molds, some of which were certainly not a part of the structure uncovered by Barrett and post-date it. Initially these were noticed in the profile of the west trench, and appeared there as two mold patterns, one nine-tenths of a foot to the east, or inside, of Barrett's mold, and the other three and six-tenths feet to the east of that pattern. The first of these extends three feet below the surface, and the second two feet. Barrett's mold at this point goes through the natural hill surface to a point four and six-tenths feet below the mound surface as it existed at the time of the 1951 excavations. In profile the effect is rather one of three stepped upward and toward the east from the pattern discovered by Barrett. The middle mold was originally dug in a wedge shape with its narrower dimensions near the bottom. This represents a not uncommon manner of digging holes and trenches for posts, and is indicated, as a matter of fact, in the profiles of one of Barrett's molds in the north trench. In the case at hand, however, the use of this digging technique on the part of the aboriginal builders was quite fortunate, in that while the part of the mold which held the post was inside of Barrett's pattern, the outward sloping side of this middle mold is toward the west and clearly cuts through and destroys a part of the mold Barrett found. While it, in turn, is intruded on by the trench which he dug. So one gets a sequence of first, Barrett's pattern, then the middle mold, and finally the trench dug by Barrett in discovering his structure. The third, or inner, mold cannot be placed in this sequence, but it does contribute to some speculations about the mound's construction. Taking the evidence of the west trench profile alone an interpretation can be made which seems reasonable and significant in respect to the mound's history. The three mold profiles would seem possibly to represent the remains of three structures, erected on three separate levels of the mound construction. The history would be something like the following:

1) First, Barrett's structure, approximately 44 feet square,

was built, quite possibly on the upper surface of the laminated layer or on the buff clay.

2) Later this structure was destroyed, and the pyramidal mound was built higher, with a consequent reduction in the area of its top surface. On this a second structure was built, necessarily smaller and leaving post remants within at a higher level than the first. It is impossible to say on which level this structure might have been built, but the profiles indicate that it originated on or above the stratum of reddish or buff colored clay.

3) Following this stage the pyramidal was built higher yet, and a new structure put up. At which particular level, however, it is impossible to say, since the earth volumes above the buff clay stratum in the west trench have been removed. The profile of this pattern, as in the case of the middle mold, can be seen to break the clay level, but plow zone is encountered immediately above this area, and further evidence is lost.

While appearances in the west trench strongly indicated the above interpretations, substantiating evidence did not appear in the other profiles. In these, Barrett's pattern appeared clearly, but no signs of the others could be found. This situation made a careful excavation of the top of the mound all the more important, and this work was developed by means of horizontal quadrants excavated in terms of the strata defined in the profiles. Material recovered was located in relation to the grid system and vertically according to stratum position.

In general, however, the horizontal area exposed supported but did not appreciably expand the picture of the profiles. The middle mold of the trench profile proved to be a cross-section of a wall trench which was a part of a combined line of trench and individual post molds which ran parallel and to the east of the west wall of Barrett's structure. But this line could not be found in other places, alhough individual post molds were scattered throughout the exposed quadrants. The inner mold which appeared in the west trench proved to be one of these, an individual mold which connected in no apparent pattern with the others. Some wood fragments were

apparent in several of the individual molds of the line which was found inside of Barrett's west wall, but it was in the molds of Barrett's structure that post remains were most common and best preserved. Fairly large fragments were recovered from the most westerly ten molds of the south wall of that pattern and from its profile in the north and south trenches.

Quite apparently a result of the quadrant excavations is to confuse the interpretation which was outlined above on the basis of the west trench evidence. Certainly those considerations must be modified, but the facts in them remain and deserve some attempt at explanation. The quadrants show only the pattern discovered by Barrett as being enclosed with four complete walls. On the other hand the west trench profiles definitely display the middle mold as a representative of a trench and post line which was constructed after Barrett's structure had been removed and was possibly connected with a higher surface level. Two possible interpretations seem to present themselves here.

1) It has already been pointed out that the western part of the pyramidal mound needed and received less building up than did that to the east, since the natural contour was higher there. With the thickness of the various building strata being thicker on the east than on the west, it means that the vertical distance between the most downward projections of post molds sunk from different levels would also be greater on the east. A possible consequence of this situation is that the molds of later structures were lost on the east through erosion and purposeful reduction of the mound by local farmers, whereas they were preserved on the west. An argument against this, however, is the apparent fact that a level surface was achieved in the pyramidal mound with the construction of the laminated silt layer. If this was true, than any additional building up would presumably be of equal thickness overall. This means that differences in depths of mold lines is in differences in the thickness of the laminated level and in that of those below it. And since the west molds extend into the laminated level, then those on the east should have if they were present.

2) But we are still faced with good evidence that some sort of structure was built on the mound subsequent to the destruction of that found by Barrett. It is possible that this consisted only of the single line mold pattern found just inside of the west wall of his pattern. Just what the function of such a structure could have been is difficult to say. But in any case, this pattern or section of pattern did exist and existed after Barrett's.

It has already been mentioned that a scattering of molds within the area of Barrett's structure were uncovered. These form no perceivable pattern. It is possible that they served as internal supports for his building or were involved in a later structure. In all there were twenty-one molds which were definitely not in any of the post lines of the structure Barrett discovered or in the trench and post line found in 1951. These tended to be shallower than those in definite lines and four of them did not penetrate as far as the laminated layer. One of the latter (feature 203) is involved in a demonstrable stratigraphic situation in the southwest quadrant of the excavated building. Here was found a double postmold which consisted of a fairly large single mold of about five-tenths of a foot in diameter, which apparently originated from the upper surface of the laminated stratum. Later the post was pulled, and, after the mound had been built up to a greater but indeterminable extent, another and smaller was sunk in the same spot. The mold of this post appears just below the plow zone but ends before the laminated silts are reached. Quite obviously the molds were involved in two different structures, one later and at a higher level than the other, which appears to have been built on or near the upper surface of the laminated silt level. Possibly this mold was an internal support for Barrett's building. It is impossible, however, to say more about the connections of the small higher mold.

Another set of molds discovered appear to be the remains of a stockade line which connects with the northwestern corner of Barrett's square molds. The presence of this feature, its apparent uninterrupted connection with the Barrett structure, and the relatively large size and depth of the molds

involved in the latter raise the possibility that his molds do not represent the ground plan of a structure such as a house or a temple, but were a stockade feature enclosing the top surface of the pyramidal mound at some time during its construction. Such an interpretation is possibly strengthened by the fact that Barrett (p. 222) regards the stockade line which runs up the northeast side of the pyramid as also connecting with the structure on top. Certainly, however, this would be no ordinary bastion, its significant position alone should indicate that. But its size as well sets it apart from the bastions which regularly appear along the stockade lines. As stated previously, the pattern found on the mound is approximately 44 feet square, while the ordinary bastions average around 15 or 16 feet on a side. All this would indicate that the feature deserves separate analysis, but does not necessarily militate against its consideration as a stockade construction. The literature on the other sites of the Middle Mississippi culture reports stockade enclosures on the tops of platform mounds. An example is mound Mx°7 at Kincaid, which at its second stage supported a palisade which surrounded a small house. Certainly the mold patterns of the Aztalan feature have more in common with the stockade molds than with those of the house patterns excavated at the site, particularly in the matter of size and depth. Barrett (p. 221) has recognized the possibility of interpreting this structure as a stockade feature, and the evidence presented here would seem to indicate that it is that view which should be emphasized.

One additional feature of interest which was uncovered through the quadrant excavations was a large ash bed marking the remains of what was probably a fireplace. Horizontally, this feature (210) was located on the eastern border of the northwest quadrant and seems to have originated from the top layer, representing the only positive evidence of occupation on this level.

It can be seen that the excavations of 1951 resulted in a general substantiation and added specific information, which can be used to indicate some of the complex history of its construction.

With this essential information secure and with time pressing the season's schedule, excavations on the southwest pyramid mound were halted and plans made to attempt a restoration. The general shape of a platform mound curving out from the terrace toward the lower village area in the east and surmounted by a smaller, relatively square dimensioned pyramid appeared fairly clearly in the 1951 profiles and the earlier accounts of Hyer and Lapham. The size and proportions of the structure could also be generally determined, but the specific dimensions needed for restoration purposes were necessarily somewhat arbitrary. From the evidence it was determined to make the upper pyramid 40 feet square at its top and 71 and 2 tenths feet square at its base, with an elevation of 8 feet above the platform. The latter was to be built out from the hillside, extending the top level of that natural feature as a base for the square pyramid. In size it was to extend 30 feet out from the base of the upper structure on both its north and its south. On the east, toward the river and the village, the extension was to be 40 feet, while on the west the platform was to be merged with the natural contour.

With these dimensions decided upon as most likely near the original, it was necessary to determine how much earth, in addition to that which remained, would be needed to restore the structure. To obtain this information, Lowell Hansen, Wisconsin State Conservation Department Landscape Architect, computed the earth volumes which would have to be replaced. Earlier in the season it had been considered that the most proper procedure would be to obtain the material from that which had actually eroded from the slopes of the mound. This, however, was thinly deposited over and through much of the village area, and to disturb this with bull-dozer methods would have resulted in loss of much information which might be obtained in future excavations. Accordingly, it was decided to scrape the southwest corner of the site for the needed soil, since this area seemed out of the more intensively occupied region and at the same time was near at hand. More specifically, this operation involved the northern part of the Barrett's section XIII and

the southern part of section XVI, uncovering the stockade and bastion system which he records as forming the extreme southwestern corner of the site.

Before earth-moving equipment could be brought in and actual restoration begun, however, certain preparations were necessary. Arrangements were made with a local farmer to cut a field of wild hay in the southern part of the Aztalan property, so that it could be used later in covering the completed mound, giving it protection from erosion and supplying a natural seed. Several hundred feet of sod were also cut. This was intended for parts of the mound which might be particularly sensitive to erosional forces. With this material obtained, means for controlling the reconstruction had to be established. With the aid of Mr. Hansen, stakes were located at what were to be the corners of the top of the upper pyramid, at the corners of its base, and at the edges of the upper surface of the platform. This system provided a guide on the intended horizontal dimensions of the mound. Vertical measurements were to be checked by transit set over a point of elevation 100 feet, arbitrarily valued for the pyramid area. From here the vertical progress of the restoration could be checked. As already stated, it was decided to raise the upper pyramid mound eight feet above the surface of the platform as this was indicated in the mound profiles, and these elevations were computed in figures relative to that arbitrarily given to the transit station. For drainage purposes it was decided to slope the platform, west to east, three feet in each one hundred feet. A condition, incidentally, which the profiles indicated might quite possibly have existed in the original structure.

With these preparations completed, earth-moving equipment was brought in, and reconstruction begun. A caterpillar tractor with a 15 foot blade and a three yard carry-all was contracted for from the Jefferson County Highway Department and was employed in scraping up the extra earth needed and transporting it to the mound area. Here a small Conservation Department bull-dozer, guided by stakes set and by transit readings, worked the material into the desired contours. Operators for the equipment were provided by the de-

partments from which it was obtained.

As these activities proceeded, the region being scraped by the carry-all was carefully observed, so that cultural information could be salvaged as it appeared. As suspected, the artifact-bearing levels here were thin and not very productive, but aboriginal features, such as pits, burials, and stockade molds did appear in the subsoil, the red clay observed in the mound trenches. In order to preserve these for more careful investigation, the carry-all was allowed to scrape only to the top of that level, about one foot below the surface in this area, and the shovel crew was directed to clean features as they appeared. The two bastions in Barrett's section XIII were uncovered, along with the stockade line between them. In addition, several previously unrecorded post lines were found. Each of the bastions was found to have a stockade leading from their northeast corner and toward the southwest pyramid mound. As earth was removed by the scraper, the area was staked according to the site's grid system and features were mapped relative to that.

In the area of the most southwesterly bastion, the scraper uncovered a single (burial 202) and a multiple burial (burials 203 and 204). The first of these intruded upon the northwest wall of the bastion and was quite apparently a later feature. Burial 202 was extended on its back, but headless. As in the case of all of the burials found during 1951, no grave goods were included. The multiple burial consisted of an adult female (burial 203) lying extended on her back, with her left knee bent slightly outward. Between her knees lay a flexed infant. Both of these were within the southwestern bastion, but no clues were present as to whether or not they were contemporary with it. A possible addition to this small concentration of burials is feature 213, a pit located about seven feet northeast of the bastion. The situation is, however, rather confused here. The feature, itself, was about 22 inches in diameter, and extended about five inches below the level scraped by the carry-all. Within it were fragments of what appeared to be bones of a human infant. Charcoal and burned earth could be seen and some of the bones appeared to be partially burned. Complicating this picture, however, is a post mold

running directly into the center of the feature and disturbing or destroying much of the contents. Certainly the post mold is a later development than the pit, but one cannot say what situation held in the pit before its disturbance. It is possible that it held a partially cremated infant burial, or it is also possible that here is another example of cannibalism at Aztalan.

Three other pits were excavated in the scraped area. These appear to have been used for refuse or storage or perhaps both. The largest, feature 216, had diameters of nine and ten feet and contained potsherds, animal bone, charcoal, and some charred fragments of corn and nuts. The other two pits also produced a quantity of trash remains, feature 214 having a number of cord-roughened and grit-tempered sherds, while feature 215 contained two large sherds, some bone fragments, and charcoal traces.

One additional feature excavated and recorded in this region was a fireplace, designated as feature 217. Although the area was scraped to subsoil for many feet around this feature, no traces of a possibly associated structure were found.

While this work proceeded with shovel and trowel, the bull-dozer and caterpillar built up and shaped the mound to approximately the form that evidence considered prehistorically accurate. When this stage had been reached, the caterpillar and carry-all were released, and the smaller bull-dozer was directed in shaping finer points of the restoration. Here the machine proved useful in smoothing the broad surfaces of the platform and upper pyramid mound and in making minor adjustments in elevations. When the restoration work had reached a point of diminishing returns relative to the control and accuracy of the bull-dozer, the shovel crew was taken off excavations in the scraped area and employed in the final finishing of the mound. This work involved minor corrections in surface slopes and levels. In addition, sod was laid along the edges of the upper surface of the pyramid, around its base, and the upper edges of the platform. To further prevent erosion, the entire mound was seeded and finally covered with wild hay.

Since the earth from the scraped region had been used in

the restoration of the mound, this area, roughly rectangular and measuring 100 feet from east to west and 150 feet from north to south, could not be filled in. Consequently, it was roughed by rake and shovel and seeded to prevent erosion.

With this last excavation closed and the southwest pyramid restored (Fig. 2) in accordance with the evidence of Hyer, Lapham, Barrett, and the 1951 excavations, the season's activities ended and the material obtained was deposited at the Department of Sociology and Anthropology of the University of Wisconsin.

BIBLIOGRAPHY

BARRETT, S. A.
Ancient Aztalan, Bulletin of the Public Museum of the City of Milwaukee, Vol. XIII, 1933.

COLE, FAY-COOPER and Others
Kincaid: A Prehistoric Illinois Metropolis, 1951.

HYER, N. F.
Ruins of the Ancient City of Aztalan, Milwaukee Advertiser, February 26, 1837.

LAPHAM, I. A.
The Antiquities of Wisconsin, Smithsonian Contributions to Knowledge, Vol. 7, pp. 41-50, pls. XXXIV, XXXV., 1855.

A CREMATORIUM AT AZTALAN

Chandler W. Rowe

One of the projects undertaken during the 1954 season in connection with the restoration of the village at Aztalan was the reconstruction of the truncated northwest pyramid. This structure proved to be of considerable interest mainly because a burial feature of a type which has not previously been reported from this site was uncovered. Insofar as this writer is aware, it has several aspects unique in the Middle Mississippi culture pattern. Before describing the crematorium itself, it would be best to obtain a picture of the mound structure in order to indicate clearly the relationship between the mound and its primary feature.

The northwest pyramid, located in the extreme northwest corner of the stockaded village, originally measured 105 feet in length, 80.5 feet in width and 9 feet in heighth. The longest axis runs in a north-south direction. Profiles cut through the mound in both a north-south and east-west direction revealed that the structure had been built directly on top of the old

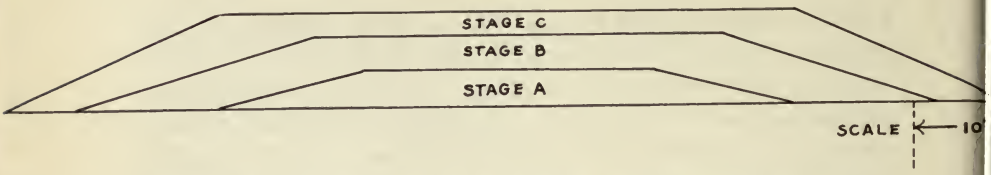


Figure 1. Diagramatic Cross-Section of Northwest Pyramid. North-South Profile.

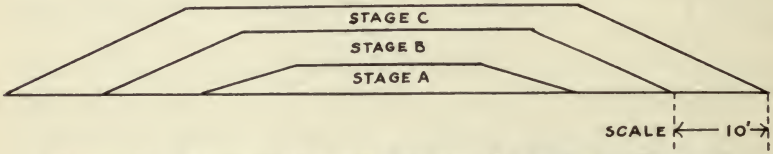


Figure 2. Diagramatic Cross-Section of Northwest Pyramid. East-West Profile.

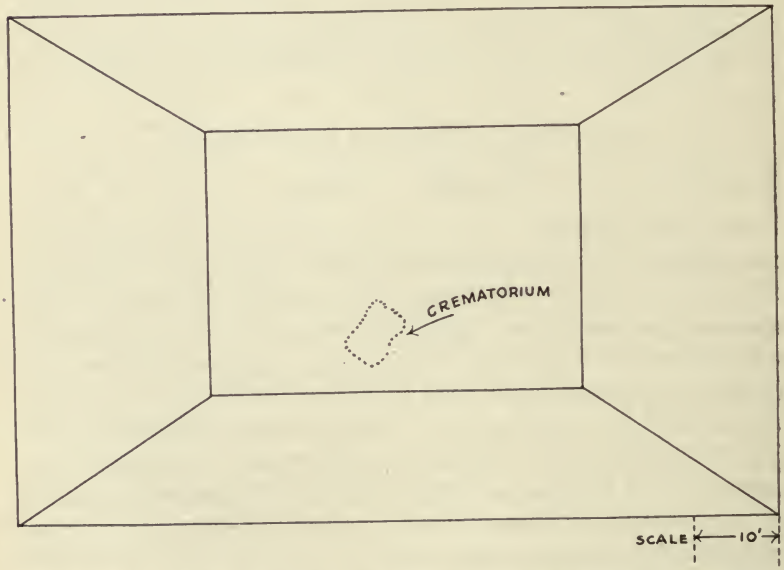


Figure 3. Top View of Stage B Showing Location of Crematorium in Northwest Pyramid.

humus, and had been constructed in three building stages. The fill used in construction was apparently taken from several places surrounding the mound site rather than a single borrow pit, although a small borrow pit was located just north of the mound. This pit, however, was too small to have produced enough fill even for the first or primary building stage. Very little cultural material was recovered from the mound fill in any level. This is not unexpected since the mound is located at a considerable distance from the concentrated dwelling along the river, and is actually at the edge of the prehistoric cornfield. Consequently, is is unlikely that very much refuse in the form of points, broken pottery vessels, and the like would be deposited in the immediate vicinity.

Stage A (Primary building stage)

This stage, built first and set directly upon the old land surface, measured 59.5 feet in a north-south direction, 41 feet in an east-west direction, and was 4.5 feet high. The fill material was apparently scooped up from topsoil in the nearby area and was very uniform in color. An occasional pocket containing ash could be observed, however. No cultural material was found in the areas excavated nor were any postholes discovered.

Stage B (Second building stage)

The second stage, completely covering Stage A on all sides, measured 91 feet north-south, 62 feet east-west, and was 7.9 feet in height. Again the fill material was quite uniform in color and type except for small areas of more clay-like soil which is the common sub-soil of the region. This may indicate that the people, in building the second stage, had continued to scoop earth from nearby and had begun in places to reach the basic clay. A few plain, shell-tempered sherds and a small number of grit-tempered, cord-roughened sherds occurred scattered throughout the fill.

Stage C (Final building stage)

The contours of the most recent stage in building the northwest pyramid have been badly eroded and broken down as a result of some seventy years of extensive plowing and cultivating. Consequently, most of the material on top of the

pyramid has been broken, mixed and scattered. The trenches revealed that the completed mound originally measured 105 feet north-south, 80.5 feet east-west, and 9 feet in height as was stated earlier. The flat area at the summit of the mound was 60 feet by 40 feet, the long axis running north and south. Since much of the latter area was plowed and cultivated, it is difficult to say how much sub-soil was used in building, and also what cultural material is associated with the fill and what has been brought in by the plow.

The Crematorium

A. Construction

The burial feature which is here called the crematorium was located on the top of Stage B, the second building stage of the pyramid. It was not centered on the flat surface, but was situated near the west side (Fig. 3). The structure was semi-subterranean and meaured 12 feet long (oriented in a northwest-southeast direction), and 5 feet wide (in a northeast-southwest direction). The pit itself was 2.3 feet in depth and was rectangular with rounded corners. The height above the ground can only be guessed at since the entire structure had been burned and collapsed, but the evidence from charred wall support posts would seem to indicate that it was an additional 2.5 to 3.0 feet, making the total height of the structure from the floor of the pit to the roof between 4.8 and 5.3 feet. The walls and roof of the crematorium were built in the manner of the Aztalan dwelling houses. Support posts, averaging 0.3 in diameter, were set in the ground around the edge of the pit and were spaced approximately 0.3 to 0.4 feet part. Some of them seemed to be set in pairs, but the pattern was not consistent throughout. An area 2.3 feet wide devoid of postholes occurred in the southwest wall. This opening probably served as an entrance. The northeast wall of the pit was protected by a log retaining wall. This consisted of two longs set one above the other and held in place against the earth wall by slender stakes driven in the ground (Fig. 6). The logs were not long enough to extend the entire length of the pit and so three short sections were used (Fig. 7). The log retainers were found along one wall only, the others were apparently thought to be sufficiently strong (See Fig. 5). The

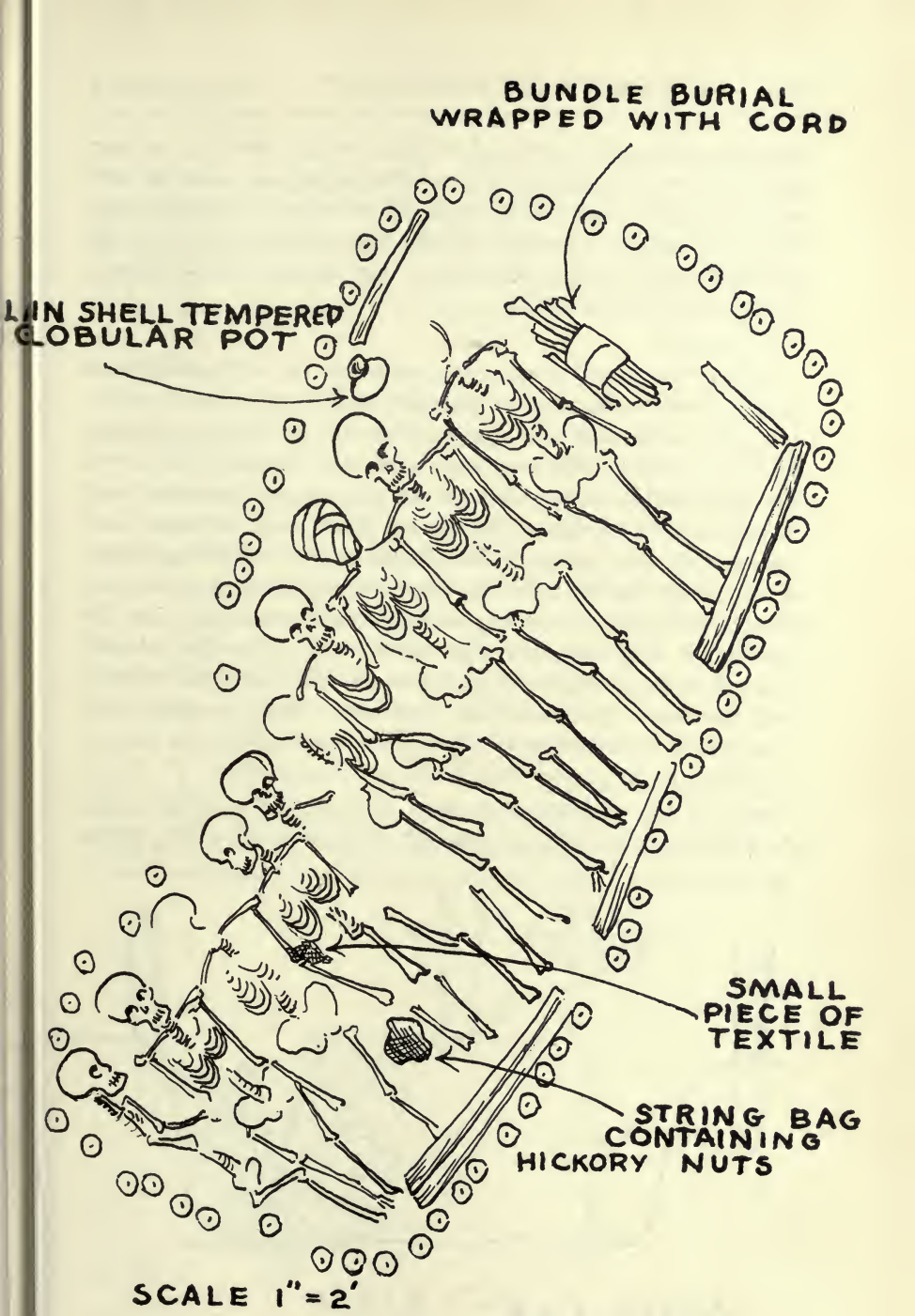


Figure 4. Crematorium Burials.

support posts were covered with a wattle made of willow branches and the entire wall and roof area was covered with a daub of clay mixed with grass of a thickness varying from 1.5 to 2.2 inches. This clay plaster was also used to cover the stockade of the villge as well as the houses and is locally known as "Aztalan brick."

B. Burials

When the crematorium was completed, the entire floor was covered with a large mat, possibly woven of cat-tail rushes (Fig. 8). The mat was longer than the pit and was folded back on itself at the southeast end to a length of 0.8 feet. Eleven individuals were placed on the mat, ten oriented with the skulls in a southwest direction. These were all adult flesh burials and were lying on their backs in an extended position, although one female (No. 1), placed at the southeast end, was partly flexed due to being more or less crammed into the structure. The eleventh individual was a bundle reburial located at the northwest end of the pit with the skull oriented in a northeast direction. The long bones were wrapped with a length of twisted cording (see Fig 4 and Plate 3).

C. Material objects

Only a few objects of material were placed with the dead. One plain, shell-tempered, globular pottery vessel with a rolled lip was found. This was in fragmentary condition located

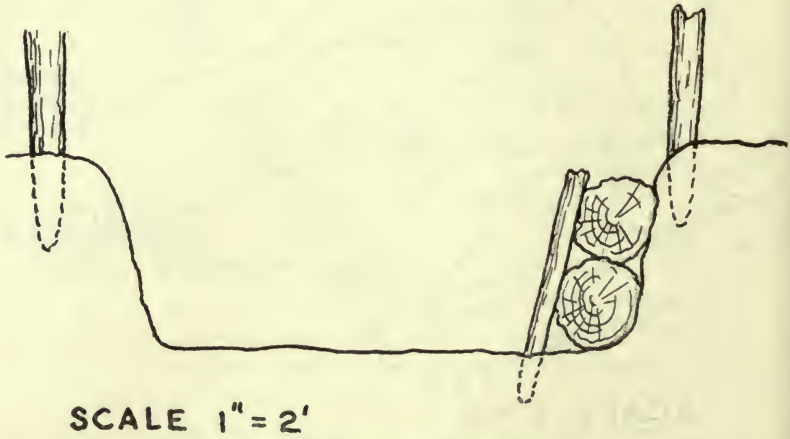


Figure 5. Cross-Section of Crematorium.

between the skulls of burials 9 and 10. Two examples of textiles were recovered. One, a small fragment, was lying across the distal end of the right humerus of burial 4 (see Plate 5), the other, a more loosely woven string bag (Fig. 9), containing 5 hickory nuts, was located near the right knee of the same individual. No other evidence of grave goods was found.

Conclusion

The term crematorium is used in connection with this feature since, as it was pointed out above, after it was built and the dead placed inside the entire structure was burned. It had been built expressly for that purpose. Apparently the fire generated great heat since the bones of the individuals contained within were so badly calcined that it was extremely difficult to expose them and impossible to remove them intact. All materials of a combustible nature were completely charred. The globular pot was refired to the extent that the pieces crumbled at the touch. In a sense, the situation was ideal for preserving normally perishable objects. The matting and textiles as well as the hickory nuts were burned but not consumed. The clay daub was fired brick hard and charred sections of the willow wattle were preserved in it. It would appear that the sides and roof of the structure fell in at a

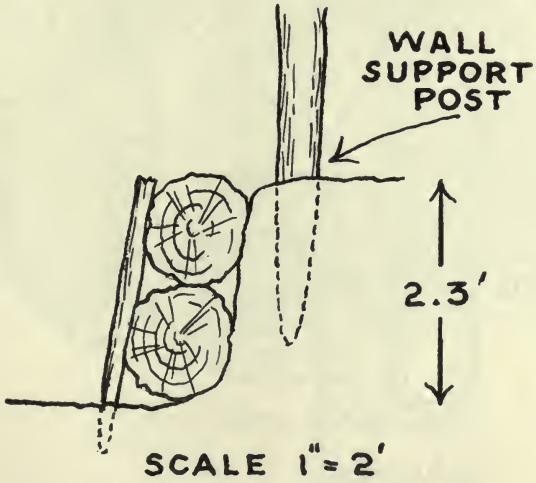


Figure 6. Detail of Log Retaining Wall.

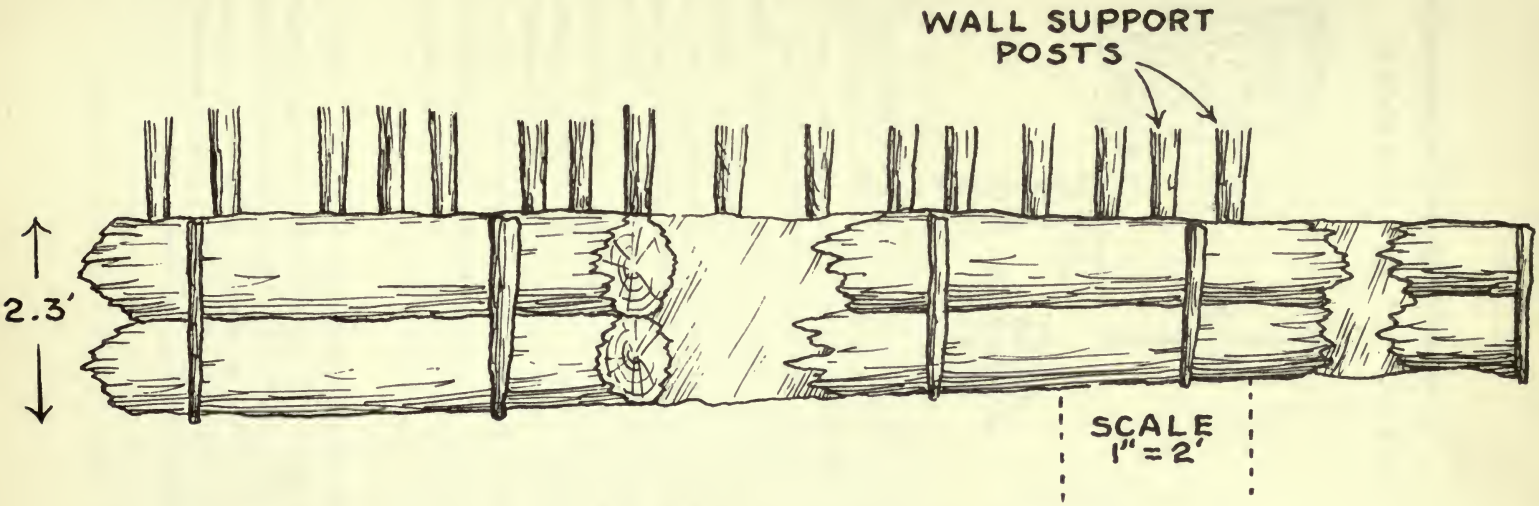


Figure 7. Side-View From Northwest of Log Retaining Wall.

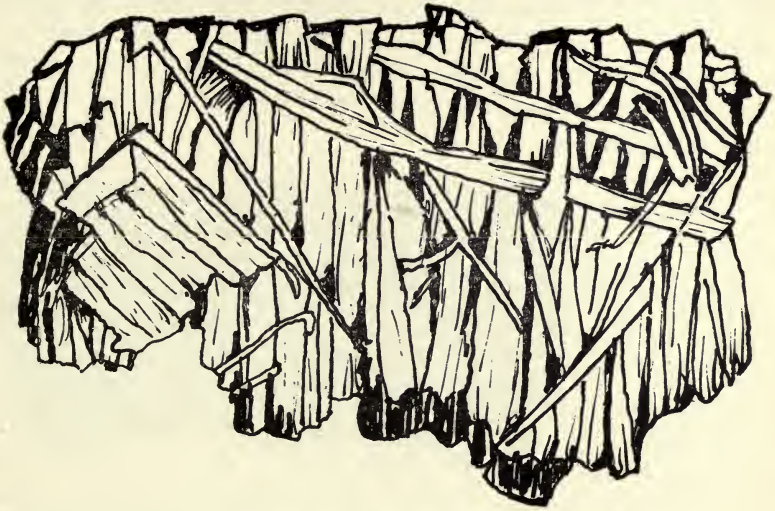


Figure 8. Portion of Mat.

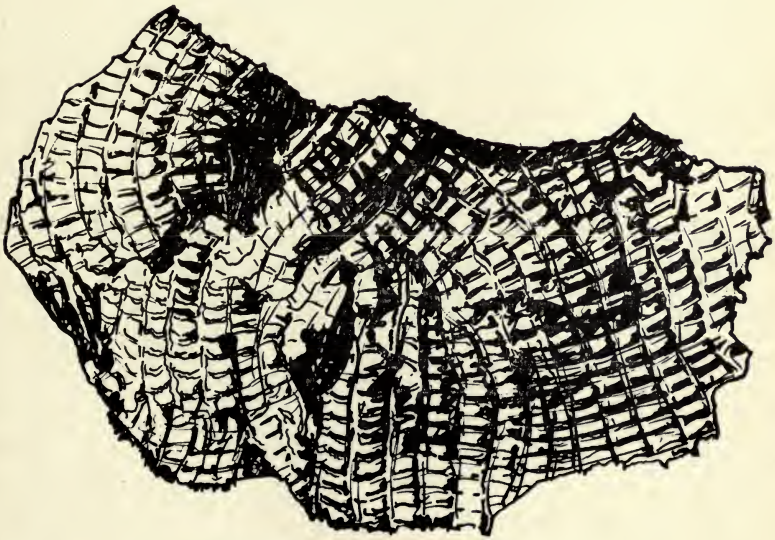


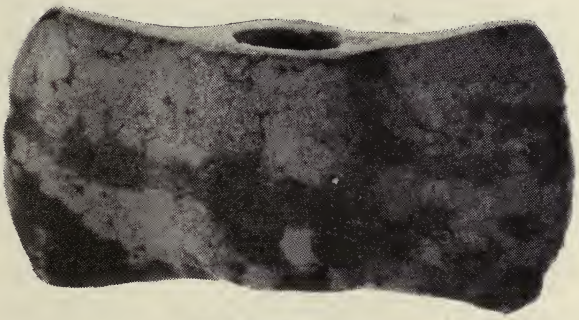
Figure 9. Portion of String Bag.

critical time and had the effect of smothering the fire thus preventing the combustible objects from smouldering away to ash. It is possible that the construction of Stage C was begun after the fire, providing additional protection from the air and weather.

It might be useful to state that the task of exposing the charred materials, a long and tedious process, was eased through the use of a plastic spray. Without this it is doubtful that the fragile items could have been photographed and certainly they could not have been removed. One disadvantage, however, lies in the fact that specimens treated with plastic spray probably cannot be used for radiocarbon dating. Specimens for this purpose were taken from the burned support posts and the log retaining wall.

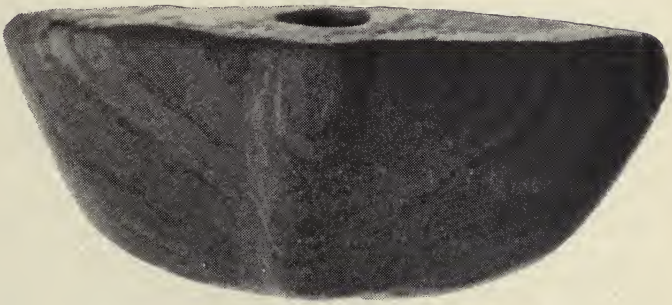
The writer wishes to acknowledge with gratitude the excellent services of Miss Joan Freeman, Dr. Harold K. Schneider and Mr. James R. Sackett who worked for a month at the painstaking task of excavating this feature.

Interesting Wisconsin Specimens



BANNERSTONE

Bow-tie type of granite. Found near Menominee Falls, Waukesha County. Three inches wide. Phil Wiegand Collection.



BANNERSTONE

Winged type of slate, 3½ inches wide. Dodge County. Phil Wiegand Collection.

We call your attention to two new books on American archeology. METHOD AND THEORY IN AMERICAN ARCHAEOLOGY by Gordon R. Willey and Philip Phillips is priced at $4.75 and is obtainable from the U. of Chicago Press, Chicago 37, Illinois. Written for the professional, but of interest to the serious amateur. Of particular interest is the section on the Historical Development approach in which New World archeology is presented in chronological stages beginning with the earliest "Lithic Stage" through the Archaic Stage, the Formative Stage, Classic Stage, and Postclassic Sage. The second book called SUN CIRCLES AND HUMAN HANDS contains a wealth of illustrations (500 of them) and deals with the arts and artifacts of the Indians of the Southeast. Obtainable for $7.50 through Emma Fundaburk, Luverne, Alabama.

THE MILWAUKEE PUBLIC MUSEUM has two new publications . . . The Menomini Powwow by J. S. Slotkin, Publications in Anthropology No. 4, Price $4.00 . . . and KACHINA DOLLS by W. Ben Hunt . . . a popular craft booklet on the making and various uses to which these dolls can be put . . . Price $1.00.

The following NEW MEMBERS are welcomed into the Society:

Dr. Tom Luther, 510 W. College, Appleton, Wis.
Charles J. Vanerka, 511 N. Park Rd., La Grange Park, Ill.
Norman L. Johnson, 121½ W. 3rd St., Beaver Dam, Wis.
Halvar Veium Jr., 505 S. Monroe St., Stoughton, Wis.

Our membership now totals 448.

At the March meeting of the Milwaukee Chapter the following officers were elected:

PRESIDENT: Arthur Niehoff.

VICE-PRESIDENTS: H. W. Cornell, Ellis Burcaw, Her-

man O. Zander, Laurence Kracht, Dr. D. A. Baerreis.

DIRECTORS: Dr. R. E. Ritzenthaler, Kermit Freckmann.

ADVISORY COUNCIL: Frank Achen, H. S. Breitwish. Dr. E. G. Bruder, William Curkeet Jr., Edward Eichenberger, Kermit Freckmann, William Godfrey, Robert L. Hall, Robert Howard, Zida C. Ivey, Mrs. Theo. Koerner, W. C. McKern. Robert Menten, William Oestreich, Neil Ostberg, Louis Pierron, Allen Prill, Arthur W. Quan, J. Ringeisen, Jr., Chandler W. Rowe, Chas. G. Schoewe, Paul Scholz, Lincoln Smith, Kirk Whaley, Dr. A. C. Whiteford, Warren Wittry.

TREASURER: Martin Greenwald

SECRETARY: Phil H. Wiegand

EDITOR: Robert Ritzenthaler

JUNE, 1958 Vol. 39, No. 2

THE WISCONSIN ARCHEOLOGIST

KANSAS CITY PUBLIC LIBRARY SEP 5 1958

A RED OCHRE BURIAL IN OZAUKEE COUNTY — 115
Robert Ritzenthaler and Arthur Niehoff

NAMING A CHIPPEWA INDIAN CHILD — 120
Sister M. Inez Hilger

INDIAN TRAILS AND VILLAGES OF DODGE COUNTY, 1834 to 1837, Herbert E. Neuenschwander — 127

AN EFFIGY MOUND AT RUSH LAKE — 130
Jack Steinbring and Franklin Farvour

THE GLOSEMEYER MOUND GROUP, WARREN CO., MO. — 144
Gregory Perino

UPPER MISSISSIPPI POTTERY FROM LAKE POYGAN, WAUSHARA COUNTY, Robert Ritzenthaler and Walter Henning — 149

OLD COPPER SPECIMENS FROM UPPER MICHIGAN — 151
Robert Ritzenthaler

COLLECTOR'S CORNER — 153

INTERESTING WISCONSIN SPECIMENS — 154

THE WISCONSIN ARCHEOLOGIST

Published Quarterly by The Wisconsin Archeological Society

New Series

MILWAUKEE, WISCONSIN, JUNE, 1958

A RED OCHRE BURIAL IN OZAUKEE COUNTY

By Robert Ritzenthaler and Arthur Niehoff

One of the very rare Red Ochre burials in Wisconsin was discovered in March, 1958 on the property of Mr. Manford Blume on the northern outskirts of Thiensville (on the Freistadt Road one block west of Highway 57). The burials and artifacts had been removed before the arrival of the authors, and burial information had to be reconstructed on the basis of eye witness reports and examination of the site.

The Red Ochre (or Red Paint) people derive their name from the practice of covering thir graves with a layer of red ochre (hematite). The Thiensville burial showed a deep red stain on all the skeletal material, and the artifacts had been encrusted with the ochre, most of which, unfortunately had been washed off before our arrival. The ochre layer covering the female was estimated to have been three-quarters of an inch in thickness covering an area two by four feet. The Red Ochre Complex has also been reported for Minnesota, Illinois, Michigan, Ohio, and Indiana, and has been assigned to the Early Woodland period going back roughly to about the time of Christ. The importance of the Thiensville discovery is in terms of the fact that so few sites have been discovered in the Midwest, with less than a dozen reported for Wisconsin and most of these obscured by inadequate data. This discovery adds considerably to the meagre knowledge accumulated on this elusive group.

The burials occurred near the crest of a sandy rise with no evidence of an artificial mound. The fact that such burials occur in mounds and in cemeteries without mounds both in Wisconsin and Michigan suggests the possibility that these people were in transition from a non-mound to mound-building phase. The burials were interred about three feet below the present surface, but about four feet had been previously bull-

dozed off, so that the approximate burial depth was seven feet. They consisted of a girl about 18 years of age in a flexed position with east-west axis, and two males (apparently in a separate pit), the position of which could not be reconstructed. As only portions of the male skeletal material (no skulls) were turned over to the Museum, little can be said about them. The female skull (Fig. 1), however, was of interest because of its extreme brachycphaly, or broadheadedness, having a cephalic index of 88. The third molars were nearly erupted thus providing age data. The skeletal material was in a rather excellent state of preservation due partly to the good drainage provided by the sand, and partially to the preservative action of the hematite. The orientation of the artifacts with the skeletal material could not be completely recon-

Figure 1

structed. However, it can be stated that all the artifacts except the shell bead and gorget were in a heap or cache near the front side of the female close to the pelvis. That at least some of the copper was in close proximity to the bone was evidenced by the green stain, particularly on the pelvis, and thoracic and cervical vertebrae.

The 59 artifacts turned over to the Museum for study were as follows:

- Implements
  - Five "turkey-tails" (fig. 2, a)
  - One side-notched blade
  - One tanged blade (b)
  - Forty-three small unnotched points and scraper-knives (d)
  - Four copper awls (e)
- Ornaments
  - One polished-stone gorget (h)
  - Four copper beads (f)
  - One marine-shell bead (g)

Artifact Analysis

The turkey-tail blades have been regarded as the diagnostic trait of the Red Ochre Complex. The resemblance of the hafting end to the tail of a dressed domestic fowl is responsible for their name. They are rather beautifully chipped, with both primary flaking and secondary retouching employed, and usually made of a bluish-gray chert known to collectors as "hornstone," which occurs in southern Indiana. They have been called both spears and knives, but the latter term would seem to be most appropriate in view of the rather extreme width of some of them. They usually occur in caches. In the case of the extreme classic type ending in a sharp delicate point at the notched end, with small notches very close to the point making hafting rather impractical, a non-utilitarian function has been suggested such as suspension from the neck as an ornament. None of this type occurred in the Thiensville burial, although one is of the pointed variety. This one is also the largest, having a length of 8 inches, with greatest width being 1⅞ inches. The other four have rounded bases.

Figure 2

The one side-notched blade is 4⅜ inches long and is of hornstone, as is the 5 inch long tanged blade.

Of the 43 small, unnotched chert specimens, 29 are unsymmetrical to the extent that either a knife or scraper usage can be ascribed, and the term "knife-scraper" has been used to describe them. The other 14 are symmetrical and could have served as arrow points. The categories graduate into one another, however, and a few of these are difficult to assign to one category or the other without being arbitrary. The largest of those so classified as points is 2⅝ inches long; the smallest 1⅜ inches. Of the knife-scrapers the longest is 2 ⅜ inches, and the shortest 1 ⅜ inches.

The copper awls are roughly square in cross section and double-pointed. The longest is 9¼ inches. The rolled copper beads include one barrel-shaped type, and three of cylindrical shape. One of the latter is extremely thick being only ⅞ inch in length, ⅝ inch in the outer diameter, but ¼ inch in thickness. The one marine shell bead is 1½ inches and highly polished. The gorget (fig. 3) is of the three hole variety with notching at either end. It is 3½ inches in length.

Judging from the paucity of sites in the Midwest, the Red Ochre people were not a numerous group. Their implements indicate an economy based on hunting, and their use of foreign materials suggest considerable trade or travel, or both. These non-local materials include hornstone from Indiana,

Figure 3

copper from the Lake Superior region, and marine shells from the Gulf or the Atlantic Ocean.

While the Red Ochre Burial Complex has been assigned to the Late Woodland period, there are a number of traits that are suggestive of the Late Archaic in Wisconsin. For example, the predilection for burial in sand, heavy rolled copper beads, gorgets, unworked galena cubes, tubular marine shell beads, and the absence of pottery are indications of the Archaic period. It would seem likely that this might be a transitional group operative during Late Archaic times and surviving into the Early Woodland period.

NAMING A CHIPPEWA INDIAN CHILD

By Sister M. Inez Hilger

The account below was sent to me by the late John E. Kingfisher, a Chippewa Indian of the village of Reserve on the Lac Courte Oreilles Reservation in northeastern Wisconsin, on February 5, 1941.[1] Kingfisher assisted me as an informant and interpreter while I was on the Lac Courte Oreilles Reservation in 1935 collecting ethnological material. The material then collected, along with that obtained on eight other Chippewa reservations in Minnesota, Wisconsin, and Michigan from 1932 to 1940, is found in Chippewa Child Life and Its Cultural Background, BUREAU OF AMERICAN ETHNOLOGY BULLETIN 146 (1951). I have corrected Kingfisher's English somewhat. The account which follows appears in Spanish in AMERICAN INDIGENA, Vol. IV, No. 3, July 1944, pp. 237-242.

A boy was born to one of my cousins about a month ago. This family is not Christian. The father of the family has strong faith in the old Chippewa customs. He belongs to one of the surviving drum groups.[2] His other three children have been initiated in the Medicine Lodge, we call it Mide wiwin.[3]

It is customary among the Chippewa that soon after a child is born its parents give a feast to which blood relatives of the child, both paternal and maternal, are invited.[4] The father of the child, before inviting his relatives, invites two or more of the most noted and popular old men of the tribe, or of the village in which he lives. The mother then invites two or more of her sisters or, in the absence of sisters, her nearest relatives. If she has no near relatives, other persons may be invited. Those invited constitute the corps of namesakes of

the newborn. Usually they number four, but not infrequently they number more. In the case of my cousin's child I was one of these invited to be a namesake. There were four of us, Old Man Mink, called Joniahgishig, meaning Moneyed-Man, was the head man of us four. — Incidentally, this Indian name was given him about the year 1890, about the time the first logging companies penetrated "this neck of the woods". He was one of the first, if not the first, to possess several thousand dollars of real cash money. He obtained it by selling timber off the land given him by the United States

---

1 The Chippewa Indians of the United States belong, culturally, to the Eastern Woodland Area of North America; linguistically, to the Algonquian stock. In the early days they were divided into bands of five to fifty families, each band headed by a chief. Each band claimed a region as its habitat. All other bands respected the rights to subsistance from nature within the region of the band occupying it. Sustenance consisted largely of wild rice gathered in water along the edge of lakes and streams, of maple sugar made from sap gathered in maple groves; of vegetables grown in garden plots, of fish, and of meat obtained in hunting and trapping wild animals. Today the Chippewa of the United States live on reservations in their early habitat, the wooded and lake regions of northern Minnesota, Wisconsin, and Michigan. They number about thirty thousand. (Cf. James Mooney and Cyrus Thomas Chippewa, Handbook of American Indians, BUREAU OF AMERICAN ETHNOLOGY BULLETIN 30, Part I; Charles J. Kappler, ed., INDIAN AFFAIRS: LAWS AND TREATIES, Washington, D. C.; Statistical Supplement of the ANNUAL REPORT OF THE COMMISSIONER OF INDIAN AFFAIRS, for fiscal year ended June 30, 1940; and by the present writer, Chippewa hunting and fishing customs, THE MINNESOTA CONSERVATIONIST, April 1936, and Chippewa Child Life and Its Cultural Background, BUREAU OF AMERICAN ETHNOLOGY BULLETIN 146 (1951).

2 A drum group possessed a large sacred drum, often called a war drum. In 1935 there were five such groups on the Lac Court Oreilles Reservation: the Chief Lake group, the Barber Town people, Reserve village, the Round Lake group, and the Whitefish people. (Unless otherwise noted the footnotes of this paper are based on my field notes collected among the Chippewa from 1932 to 1940.)

3 The Mide wiwin is the Chippewa "mode of worshipping the Great Spirit, and securing life in this and a future world, and of conciliating the lesser spirits, who in their belief people earth, sky, and waters . . ." (William Warren, HISTORY OF THE OJIBWAYS, Minnesota Historical Society Collections, 5:100.) Although spring and fall are the usual time for holding the ceremonial, it may be held at any time as a thanksgiving or petition offering. A person of any age may become a member.

4 The naming of a child at a feast given by its parents shortly after its birth is institutional. Either sex may name either sex, but an unfailing rule is that the namer has grown old in continuous good health. A Chippewa name originates in a dream of the namer.

Government. He was always in possession of so many silver and gold coins that soon his neighbors and friends began calling him Joniahgishig. And I believe he likes the idea of being a rich man, although he possesses very little of earthly goods now. — But to get back to the feast. There were some twenty or more guests present. Plates were set for all of us on very clean oil cloth which lay on grass mats that had been spread on a very clean floor. [5] The dishes were so set that one could easily imagine himself sitting at one of the long tables used at modern banquets. At the east end of the table — the table was set in an east-west direction — four special places were set with food already in dishes; the other plates had no food on them. And no one had yet been asked to be seated. The child's father asked all present to take some of the tobacco that was being passed from one guest to another. After all had taken tobacco, most men and some women filled their pipes; but no one lit his. All seemed to be waiting for the head man, Old Man Mink. When he took the pipe which was resting in a large bowl beside the big drum, the war drum, as we call it, [6] the helper — another old man — struck the drum and sang a song. Immediately after the song was finished, Old Man Mink began to talk, explaining the purpose of the gathering. The following are his words. — I took them down in shorthand. I have often wished I had the wonderful vocabulary of some of our Indians, a vocabulary that expresses impulses as exalted as ever dwelt in human heart. — He said: "We are here for the purpose of assisting this family in naming its new member. Before we partake of the food which has been so well prepared, we must cast our eyes to the skies above where roam the spirits and ask them to look down on us and give us their blessing so that everything we do in behalf of this child shall receive their approval." [7] Then he

---

[5] Eating meals off mats woven of bulrushes (Scirpus validus Vahl.) is institutional.

[6] A similar bowl containing kinnikinnick and a pipe were seen by the writer near a similar sacred drum among the Menominee on the Menominee Reservation in Wisconsin in 1936.

[7] The Great Spirit, **Kice Manito**, was seldom prayed to except at the Mide wiwin celebration. Minor spirits, **kitchi manitos**, among them such as dwell in rain, snow, thunder, wind, storms, were prayed to in this instance.

asked that all pipes be lit. But before doing so he lit the big pipe which he was using. After he had lit it, he lifted it up, as is customary in all pipe ceremonies, and pointed it first to the east, then to the west, then to the north, and then to the south, [8] Then he puffed it for some few minutes. Next he said a prayer, at least it sounded like one to me, and concluded by saying: "As smoke rises to the skies above, so shall our requests in behalf of this child. His welfare we place in the hands of the Great Spirit above."

The father of the child then asked certain guests to take certain places, still, however, reserving the four places at the east end of the table. Next my name was called and I was told to take the place to the right of the place reserved for the head man. The other two namesakes were ordered opposite me, to the left of the head man. Then the rest of the guests present were placed, as many as could be taken care of at the first sitting. When all were seated, Old Man Mink was asked to take the place at the head of the table. As he was taking his place, he said that he had been thinking for a long time as to what name he should give this newborn child. Then he began the speech that told the origin of the name he would give the child. "Many years ago, when I was somewhat younger than I am today," he said, "I was out hunting for deer. The day being cloudy I became confused in my directions, and got lost. It was getting late. I had no way of determining how far I had roamed away from our camp. The country was strange. If darkness had not set in, I would in all probability eventually have found my way back. But I decided to take it calmly. I looked for a place to build a fire, and, perhaps, get a little sleep. After daylight. I knew I would be on my way again. I finally must have fallen into a deep sleep. It was while I was sleeping that an incident happened that I am going to tell you about. I visioned in my sleep that I was lost, or, I should say, I dreamed in my sleep that I was lost. The country seemed strange. I did not know what I was doing way out in the woods, for I had no gun, no bow and arrows, and no hatchet. All I could find on my person was a

[8] This manner of ceremonial smoking is institutional.

small knife used in skinning small animals. I could not figure out why I had gone out there. So I began to look around me in an effort to get my bearings. But nothing looked familiar. So I decided to follow a straight course in one direction, and by doing so I thought I would wind up somewhere, maybe at a river or a lake. Finally I came upon a river, a very wide river. Perhaps I should say it seemed to me to be about as big as the Chippewa River. [9] In fact I believe it was the Chippewa River I dreamed about. So I decided to follow the river downstream thinking that if I went far enough I would come to where the Flambeau and the Chippewa fork. From there I thought I could retrace my steps, knowing now where I was. Unexpectedly, while I was walking along the shore, I came to a big swamp, a very boggy one. As far to the east as I could see there was swamp; it was so large. I tried to wade into it, but it was so swampy and boggy that I was afraid of being mired and then I **would** be in a quandary. I sat down thinking. What shall I do? I can't go across the river to the other side for the current is too swift. And swamp to the east and swamp to the south! Finally I thought that if I could get a log I could float down the river. But then it would take a man trained in riding logs to be able to stand on one in that swift current. Furthermore, it would take a good-size log to float me, and there was none large enough around, so far as I could see. Neither did I have an axe to chop one down. All I had was that small skinning knife. I thought of the advice of my grandparents with whom I had stayed so many years [10], that if ever I found myself in a tight spot, I was not to give up; that there was always a way out of a situation if only one used the head God had given one. I began to think very seriously. My only salvation was, I knew, to float down the river. But I had to have something to float on. As I looked around, I saw a pretty good-sized tamarack tree, and it was dry. But how to cut it down when all I had was the small skinning

9 The Chippewa River is one of the longest and most scenic rivers in northeast Wisconsin. It empties into the Mississippi River just south of Lake Pepin. The Flambeau River is one of its tributaries.

10 It was institutional for Chippewa grandparents not only to instruct their grandchildren but to feed and house them, virtually to adopt them.

knife was something to wonder about. But I thought if this little knife will cut a twig in one or two strokes, why will it not cut this tree in time if I keep at it? I had always been told that in order to have anything one must work for it. I resolved that I would begin at once to cut that tree with my small knife, even if it took me a long time. It was the only way that I could think of getting away from there. So I began to whittle away, perhaps at a slower pace than a beaver does. But eventually, I thought, I will master the situation. It took me a long, long time. I was getting tired and hungry. I didn't remember when last I had eaten anything. But I was determined, if necessary, to die in my effort. Finally, after what seemed like ages, I got the tree down. The next job was to get it down to the river. But that wasn't so difficult. I got it down to the edge of the river and rolled it in. Then I braced myself on a canelike stick and jumped on to the log. The current now took me down the stream. I was having great difficulty staying on the log. But I resolved to put forth my very best efforts. I was full of determination. Finally I came around a bend, and there I sighted a camp of people. — Most of those I saw there then are now dead. — These people asked me where I came from. I told them that I had gotten lost back there in that big swamp. But I couldn't tell them why I was there. They were surprised to see me. They also said that no one ever came down the river; that some one had tried it but that the current was too swift for any one to succeed. Then one of the older men spoke up and said, 'Well, the only reason he made it is because he was able to stand on a log. His strong mind and perseverance got him here; if it were not for that he would have drowned, or he would have starved back in that big swamp'. Then I woke up. I looked around. It was broad daylight. I could tell the directions from where the sun had risen. I began to walk westward and a little to the north. After I had walked almost a half day I began to see familiar things. Soon after I recognized the territory. It wasn't long into the afternoon before I found our camp. No one seemed worried because of my absence. That night I told them what had happened. So now after telling you this experience, may the life of this young boy be like that which I

experienced; whenever he finds himself in a tight spot, may he use his head and think of ways to get out of it as I did on that occasion. That was a lesson well worth remembering. Perseverance is the same as success. And where there is a will there must be a way. I shall now name this boy Naytahwegahbow!"

A short translation of Naytahwegahbow is Perfect Stander or perfect Balancer. More fully translated it means "The man who can stand up under trying conditions. Most Chippewa names cannot be translated so that they will have their full meaning. One needs almost to tell the story related to the origin of a name in order fully to appreciate the name. All Chippewa names have meaning.

After the name Naytahwegahbow had been recited by the old man, all of us had to repeat the name. Then the old man took the baby in his arms and talked to it as if it could understand, telling it that it was his wish and the wish of all present that he would live up to his name. The baby was then passed to each of us, the other three namesakes. We had to kiss the baby and repeat the name. Then the baby was passed on to all the others present. Now the feast began. Everybody ate heartily.

The telling of the story by the old man consumed about twenty minutes, according to my watch. The rest af the time was passed in exchanging ideas, telling stories, smoking, et cetera. So ended the naming ceremony to which I was invited and in which I was asked to take part.

An older person who is asked to be a namesake considers the honor very highly. The presents which one gives to a baby are not things which the baby can use now but such as it can use later in life. Presents might be guns, hunting knives, packstraps, and the like.

INDIAN TRAILS AND VILLAGES OF DODGE COUNTY
1834 to 1837

By Herbert E. Neuenschwander

Dodge County like many other areas in this state was once inhabited by successive Indian tribes, most of which left their artifacts in testimony of their wanderings. The Menomini and Winnebago and perhaps some Potawatomi, however, left evidence of their travels in the form of discernible trails.

Fortunately for us, the early government surveyors recorded the exact location of many of the well-worn trails in use between 1834 and 1837. Just as our highways do today, Indian trails connected the principal villages, and the main trails had various branches.

According to the original surveyors' records the three main trails had the following routes:

1. East shore of Fox Lake to the Buckham Corners (highway 151 and County trunk A) to Rolling Prairie to Minnesota Junction to Juneau to Doty Park (highway 60 and 115) to Hustisford.

   From this main trail there were branches leading from:

   Rolling Prairie to Horicon
   Juneau to Horicon
   Doty Park to Wolf's Point

2. North shore of Fox Lake to Crystal Lake, to Oak Grove, Clyman and Watertown (highway 26 follows this trail between Oak Grove and Watertown).

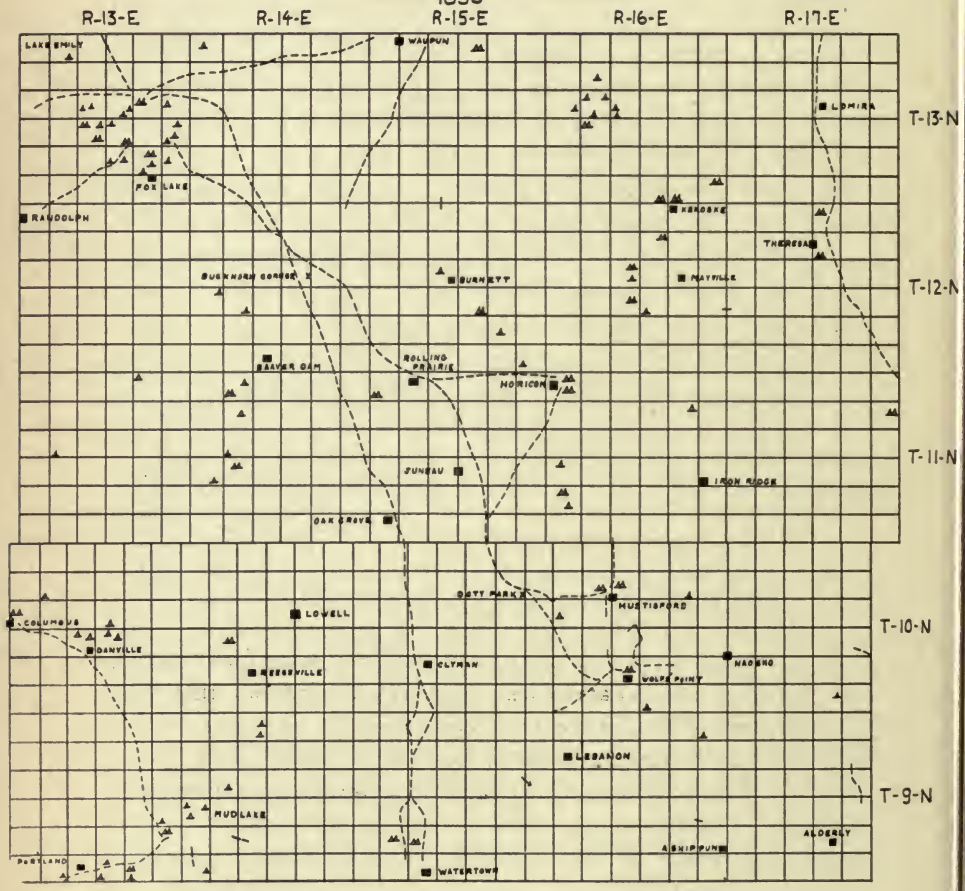
   This trail had two branches:

   From Clyman to Lebanon to New Ashippun to Alderly.
   Clyman to Wolf's Point (3 miles south of Hustisford).

3. Theresa and Lomira and beyond (includes that part of former highway 41 near 175 which lies in Dodge County). This was the main Lake Winnebago to Milwaukee trail.

INDIAN TRAILS AND VILLAGES OF DODGE COUNTY

1836



Among the shorter but equally significant trails were the following:

Lake Emily to Fox Lake
Randolph to Fox Lake
Fox Lake to Waupun
Beaver Dam to Waupun
Columbus to Danville to Mud Lake
Portland to Mud Lake
Watertown to Mud Lake
Hustisford to Horicon on the east side of Rock River
Hustisford to Neosho on the east side of Rock River
Hustiford to Wolf's Point

There were evidently still other trails judging by the location of Indian villages, which were not systematically recorded by the early surveyors. It is believed that there were trails from:

Horicon to Mayville to Kekoskee
Horicon to Mayville to Theresa
Horicon to Burnett, Atwater & Waupun
Hustiford to Watertown

At the time of the survey it appears that the principal Indian villages were at the following locations:

Fox Lake	Hustisford
Horicon	Mud Lake
Mayville	Danville
Theresa	Columbus
Beaver Dam	

By way of explanation — Wolf's Point is a promontory overlooking Rock River about 3 miles south of Hustisford, the place where an Indian village and cornfield was located in 1836; also the place allegedly visited by Chief Black Hawk on his journey up Rock River in July, 1832 and mentioned by Increase Lapham in his "Antiquities of Wisconsin."

Sources:

The information on trails and villages came from Surveyors' Records 1834 to 1837 on file at the State Land Office, State Capitol, Madison.

Archeological Atlas — Charles E. Brown
History of Hustisford — H. E. Neuenschwander
Wisconsin Archeologist

AN EFFIGY MOUND AT RUSH LAKE

By Jack Steinbring and Franklin Farvour

ACKNOWLEDGEMENTS

Our kindest thanks must go to Mr. Krisbaher and Mr. Lewellyn upon both of whose land the mound group under consideration lies. Mr. Krisbaher was especially helpful in permitting us access and in initially indicating to us the position of the mounds. Mrs. Kay Meana and her 4 year old daughter, Linda, also deserve our very special thanks for this assistance in the field. The industry and interest of Mrs. Meana, a housewife with four children, are the object of our sincere admiration.

Introduction

In an effort to locate a late historic (1844) Winnebago Indian village situated by report (Lawson Mar. 1903) in the vicinity of the outlet of Rush Lake, a "panther" type effigy of remarkably well preserved character was discovered. This mound, measuring in its maximum length 203 feet, had been erected on the high ground overlooking a rather steep shoreline of older Rush Lake. Although today dense marine vegetation has served its role here as elsewhere in forcing the lake into ever increasingly limited confines, it seems clear that at the time of its construction this mound was less than 100 feet from the actual shore of Rush Lake. The cabins of modern duck hunters today dot the fairly firm turf out to distances of as much as 500 yards.

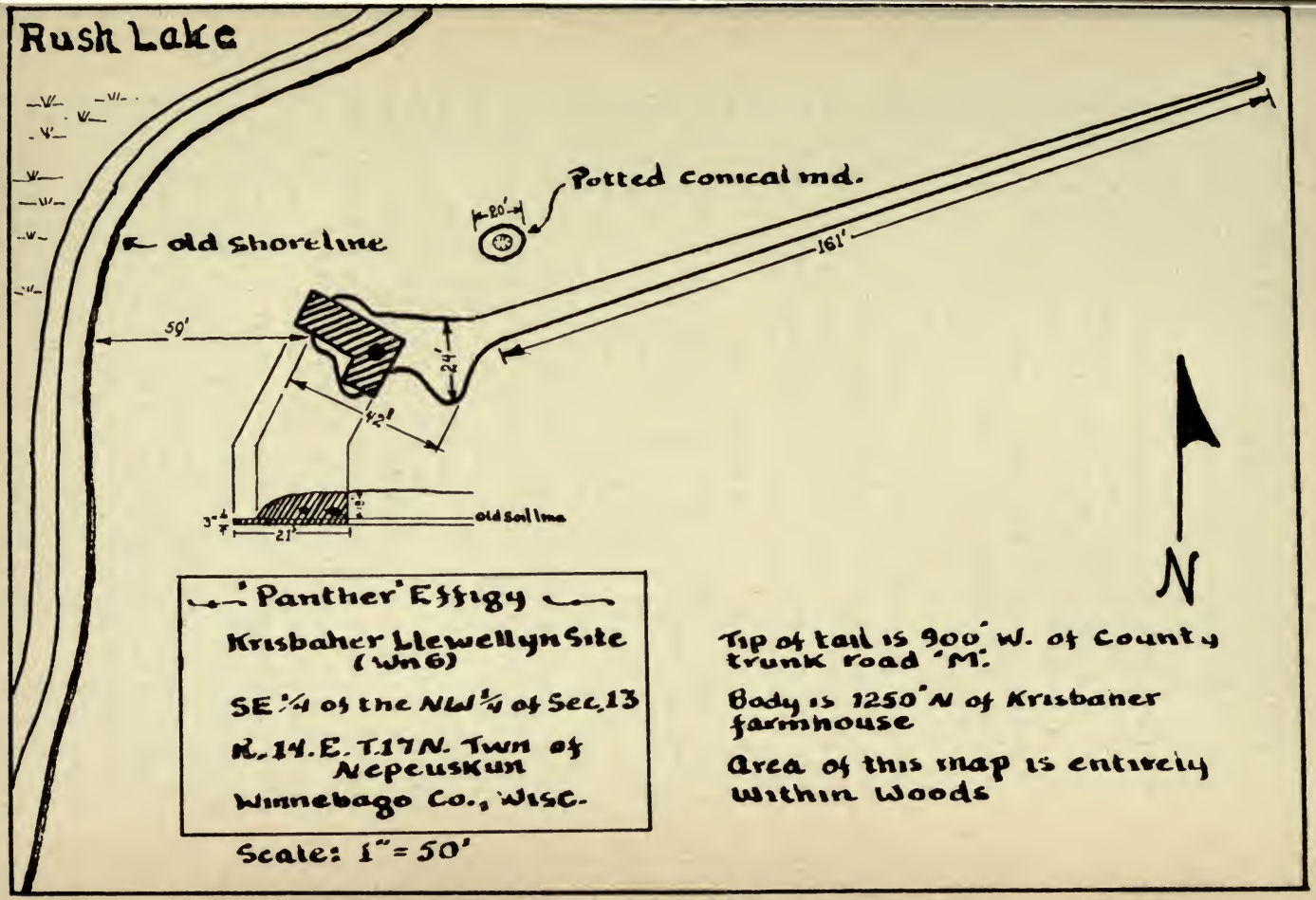
The sharp embankment of this old shore now stands approximately 20 feet above the waterline and every year recedes just a slight bit more in the direction of the several mounds which ancient Indians erected many hundreds of years ago. Only 50 feet and an unknown number of years remain to preserve the large panther mound lying to the east.

Contained within a woods of oak, birch, hickory, and maple this mound holds many trees which shelter it from the devastating effects of powerful onshore winds and heavy rains. So successful, in fact, is this cover that it not only helped maintain a mound 2 feet in maximum height but permitted our very excavation to proceed most comfortably while the early fall rains spattered away all around us. It was a most pleasant sensation.

As seems so frequently to be the case this mound was constructed upon the forward slope of a gently descending hill. The orientation, if such it be, was generally east-west with

head end lying to the west and being closest and nearly perpendicular to the old shoreline. The gradient, however, was descending from north to south and the back of the feature occupied the top and level portion of the small hill with the legs extending downward to the south. These formed an angle from the horizontally-lying back of approximately 25 degrees. A great many panther effigies have been positioned on hillsides in a roughly similar fashion. It would seem that rather than the selection by aboriginal architects of a position commanding a large area of open terrain, it was the immediate topographic peculiarities which dictated the placement of this mound. The landform was to be consistent with the posture and anticipated dimensions of the mound to be constructed. A conical mound, 20 feet in diameter and 1 foot high, lying 30 feet north of the tail-body junction of the panther mound, however, occupies the highest elevation in the immediate vicinity. In the absence of timber this position would command a view of grand scale encompassing many miles of Rush Lake's shore. This situation is seen rather frequently too, but the variable qualities of time and sub-cultural activities have served to obliterate the order which would strengthen any attendant conjecture.

It was obvious upon the discovery of these mounds (and subsequently 2 others several hundred feet to the south) that we were not the first to observe them or to direct our energies toward their excavation. A shallow pit (6-8 inches deep and 18 inches in diameter) occupied the head region of the mound, and a larger pit (10 inches deep and 3 feet in diameter) had penetrated the heart area of the body. Several "dishpan" size pits were also located variously in the back, hip, and tail portions. None of these had extended to any serious depth and it could be supposed that they were afterthoughts to the deeper pit upon the body. Small quantities of sherds were callected from the spoil of this latter pit and one stemmed, lanceolate, flint projectile point was also recovered there. This pit had not reached subsoil, there being 8 to 10 inches of earth remaining before the dense yellowish-red clay appeared. Sherds and flint occurred also on the sur-


Rush Lake
Potted conical md.
20'
old shoreline
161'
59'
24'
42'
3"
21'
old soil line
N
'Panther' Effigy
Krisbaher Llewellyn Site
(Wn 6)
SE 1/4 of the NW 1/4 of Sec. 13
R. 14. E. T. 17 N. Twn of
Nepeuskun
Winnebago Co., Wisc.
Scale: 1" = 50'
Tip of tail is 900' W. of County
trunk road 'M'.
Body is 1250' N of Krisbaher
farmhouse
Area of this map is entirely
within woods

faces which had not been potted. The densest accumulation of these was observed to be in the forward regions of the head. It was from the northwest limits of the mound, then, that our exploratory trench (5 feet wide) was initiated.

The Excavation

This trench, begun 2-3 inches below the old soil line upon which the mound was erected, proceeded at a southeasterly orientation for a distance of 21 feet (See Map No. 1). A horizontal line was maintained to insure sufficient depth and at its southeast terminus another trench was excavated perpendicularly to the first. It was also 5 feet wide.

For the first 10 feet of our trench, which we excavated in 6 inch levels, there appeared nothing more rewarding than a few unretouched flint flakes and occasional flecks of charcoal. Fire broken rocks occurred rather frequently, but no certain vestiges of Indian manufacture were yielded until we reached a distance of 10 feet 6 inches inward from the nose region. Here we recovered, at a depth of from 14 to 18 inches, several sizable potsherds. One is a rather large rim sherd measuring 90 mm. in length by 50 mm. in width. It is 8 mm. thick and is cord roughened. The temper is a medium to fine grit with the largest particles being no greater than 1 mm. in diameter. An inspection of these under a microscope suggests that they are amphibole, a common ingredient of granitic rocks. Twenty-seven mm. down from the lip there extends around the vessel (at least all along this particular sherd) a horizontal band of oval depressions rather poorly defined and not affecting the interior contour. These may have been accomplished with a blunt instrument, perhaps a stick possessing on its end some wrappings of the same cord which served to roughen the rest of this sherd's exterior. It is also possible that these depressions were caused by the application of a finger, there being an indistinct but apparently regular line running diagonally across each of them. (See item No. 2, photo No. 1.) The corner of a fairly large and slightly rounded cord-wrapped paddle could also have achieved this effect quite well. Further efforts to decorate this ware are seen evidenced in very eroded parallel diagonal markings up-

Photo 1

Artifacts recovered at the Krisbaher-Llewellyn Site. 1 quartzite pecking stone; 2-4 potsherds; 5 grinding stone; 6-9 projectile points; 11 blade fragment; 12 side scraper (pip is not a graver); 13 crude triangular projectile point; 14 snubnose scraper; 10 turtle plastron; 15 celt fragment; 16 blank.

on the lip. These proceed toward the exterior from left to right and could have been either cord or incised lines, they now being too eroded to make this clear. The lip of this sherd is everted as shown in the accompanying diagram and at the position occupied by the horizontal row of depressions there is a slight outward curve. This curve could very easily have resulted from the pressure application required by the decoration. The colors of this sherd range from a reddish brown on its exterior to a grayish core (which contains a pattern of exfoliations suggesting perhaps the inclusion of shell either accidentally or purposely as additional temper). The interior is a dull brown and possesses a rather irregular surface. This particular variety of pottery is duplicated quite perfectly in sherd collections both surface and excavated at the Koehler (Wn4) site 4 miles to the south west (see Map 2).

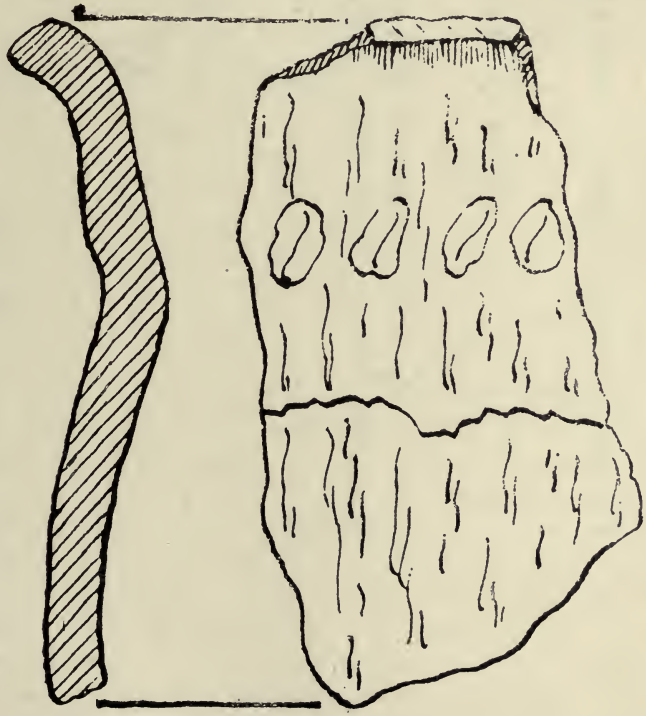
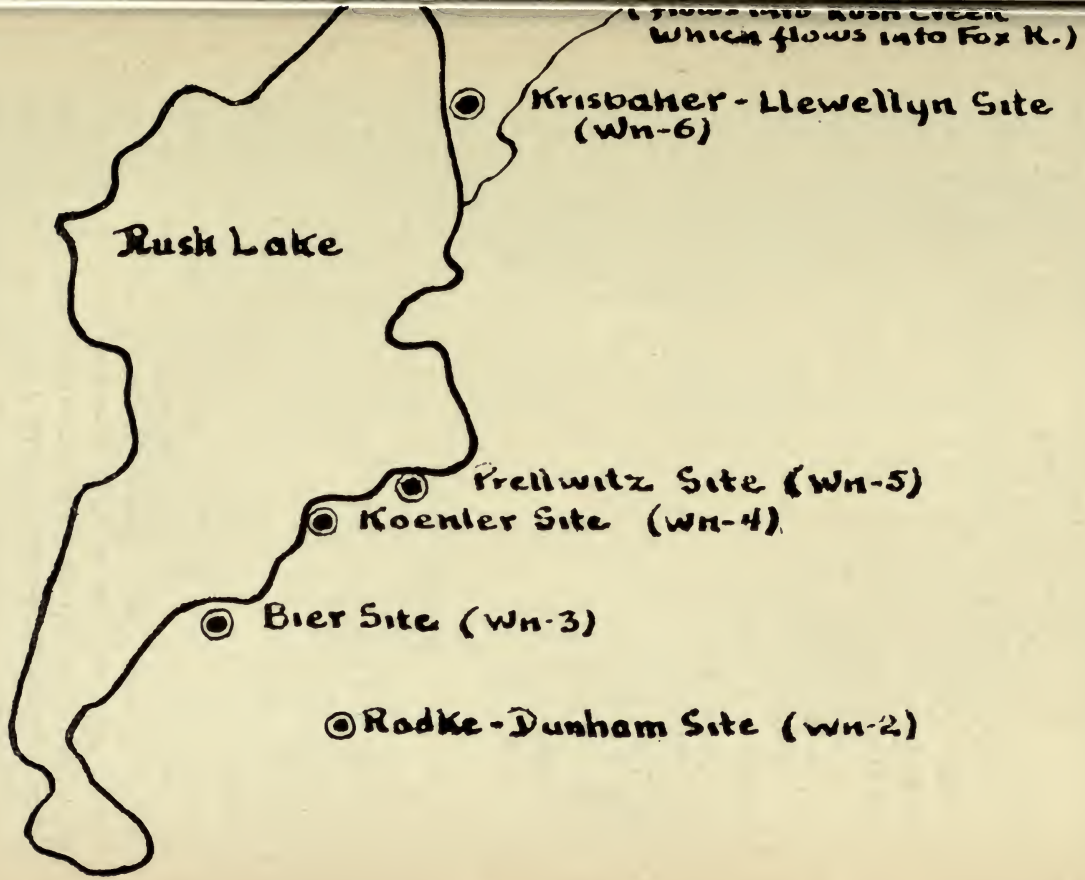


Fig. 1. (actual size)



Rush Lake, Winnebago Co. Wisc.
1" = 1 mile

Another rim sherd of well defined decorative treatment was unearthed at the same position. It is dark brown, straight to slightly outcurving of rim, fine grit and sand tempered, and has very neat diagonal incisions marking the area beneath the lip. Just above these incisions runs horizontally a single band of small depressions executed by the impression of a tiny stick end wrapped with cord. It is 7 mm. thick and is 25 by 25 mm. in its other dimensions (item 3 photo 1). The incisions are 1.5 mm. wide and are spaced at 2 mm. intervals making it a Narrow Incised variety. Several flint spalls and two more very eroded and stylistically indistinguishable sherds were also recovered in this immediate area. There were no signs of rodent burrowing and these items were clearly well within the vertical limits of the aboriginal earth-work. There is no evidence that these items were purposively included in the mound and it would seem that they were the result of accidentally carrying, the pre-existing occupied surface most likely being the source of earth for the mound.

The next items of interest recovered in the excavation were unearthed at a depth of from 14 to 18 inches in the heart region (see black circle, Map No. 1). They were all rather closely grouped although there again was no evidence of intention. None was on the floor of the mound and no charred bone, ash or fire broken rock were in immediate assciation. Found most closely together in what would seem to be nearly the center of the heart area were a turtle plastron (broken in many pieces) and a stemmed lanceolate, gray-brown chert projectile point with small baseward projecting barbs (item 7 photo 1). It is 50 mm. long by 28 mm. wide and is 11 mm. thick. The stem is 15 mm. long. The turtle plastron has been restored and shows no evidence of having been used in any way or decorated. Although a precise identification has not yet been made, it appears to be that of the common mud turtle (Fam. Kinosternidae). It should be noted too that spoil (and in this case the word can be used in absolute literality) of the pot hunters yielded a projectile point very much like the one mentioned above. Its position upon the bank of earth obviously thrown up from the hole dug into the heart

area suggests that it had once been very close to the one we obtained. Being on the top of the spoil it would most likely have been dislodged from the deepest position in the pit. It was at precisely this point (horizontally) that our own trench struck the old excavation and rewarded us with the plastron and projectile point. Our finds however, were made 2 to 4 inches below the greatest depth of the pot hole. This projectile point (item 6, photo 1) is almost identical in size to the one excavated, it being 49 mm. long by 30 mm. in width, and 10 mm. thick. The stem length is 15 mm. Its barbs also project basewardly but its blade sides are more straight giving it a semi-triangular outline. It is also slightly different in that it is manufactured of a rose and pink mottled flint.

Two body sherds were also found here, one very small and indistinguishable of grit temper, and a larger one of great thickness (13 mm.) of which the exterior surface is missing. This latter is very coarse and grit tempered. Several flint flakes were also recovered, one of which has evidence of use in the form of work scars but no certain retouching.

The spoil thrown up by the earlier diggers also contained 12 body sherds and a small bit of red ochre. The sherds were all grit, or, in one case, sand tempered. Two have plain smooth exterior surfaces, nine have cord roughening, and one bears a row of 4 neat horizontal incisions over cord roughening. This last is a dark reddish brown sherd of strong, fine grit tempered construction (item 4, photo 1). The incisions are 1.5 mm. in width but vary greatly in the distances which separate them (from 1 to 3 mm.). The spaces are very regular for the horizontal length of the sherd. Slight differences in the walls of the grooves suggest that at least different instruments were used for each incision if not a single, multiple tined applicator.

Surface Recoveries

Upon the slope of the old shoreline about 50 feet to the west of the head end of the panther mound were found a few surface items. These could either have been washed down from the top or dislodged from their original positions within the bank. They include one quartzite pecking stone, 11 body

sherds, and one small gray, flint core. All of the sherds were grit tempered, and, with the exception of one cord impressed specimen, all were only cord roughened. Their badly eroded condition does not warrant further description. The quartzite pecking instrument is of a rather coarse grained material tending toward a rose in color, and is roughly rectangular in outline (item 1, photo 1). Two edges have been battered to a fairly smooth degree and two are somewhat broken making it impossible to tell whether they too had served the aboriginal workman. It is uniformly 12 mm. in thickness. The quartzite is of a flaky composition and does not appear to be a clearly identifiable Wisconsin variety. Quite possibly a glacial pebble originally served as the source material for this artifact. A great many flint flakes were also collected in this area. Several small test pits on the slope revealed nothing.

A large plowed field embraces on two sides, the east and south, the woods which contains the mound group. In this plowed field just south of the woods and approximately 100 feet from what presently seems to be the most southlying of the group (a conical), a number of artifacts were recovered through the efforts of two surface searches. These items included three projectile points. One is a rather poorly made triangular point of a brown chalcedenous flint (item 13, photo 1). A stemmed projectile point of blue-gray flint is also present. It is roughly lanceolate and has no sharp barbs as did those from the mound (item 8, photo 1). All of the points yielded by this site have been percussion flaked with only an occasional attempt at additional pressure work. The final projectile point is also a stemmed specimen with a slightly flaring basal region. It has broad shoulders and is straight sided up to the point where it has been broken, perhaps somewhat less than one-half its blade length (Item 9, photo 1).

Probably most interesting among the items recovered in this area was the cutting end of a nicely polished diorite celt. It is most remarkably symmetrical and its outline from a side view (item 15, photo 1) suggests that it was once part of a very handsome piece of Indian equipment. It is 47.5 mm.

high and 22.0 mm. in thickness. The style and material are duplicated in surface collections from the Koehler site (Wn4) only, at Rush Lake.

One much used combination hammering and grinding stone was also recovered. It is 79 mm. long, 56 mm. wide and 27mm. in thickness. One face has been used a great deal in grinding. Were it not for the wide pecking facets (seen easily on photo 1, item 5) it would occur as a very common variety of small mano. These pecking facets are present at both ends, one end showing an especially broad one but completely to one side of center. The material is basalt.

The only other article worthy of description is a snubnose scraper identical in type to those found at the Radke-Dunham (Steinbring, Mar. 1957), Bier, and Koehler sites. It is 16 mm. long, 12 mm. wide and 3 mm. thick. The dorsal surface is smooth as well as the ventral with all of the delicate workmanship being observed at the bight end. There is a slight projection from one edge but this is the result of a fracture and it is clearly not a graver. There is also some slight fracturing along the edge opposite this projection but it in no way affects the categorical location of this item as a snubnose scraper. The material is a high quality gray-white flint. Among the remaining articles found in the plowed area are a side scraper, a broken blade, two flake scrapers, and an unidentifiable artifact fragment.

It should be noted that both canvasses of this area were undertaken at times when the surface conditions were far from ideal. It is thought by the writers that several penetrating rains would render this a highly productive site. A great many cores and flakes present there and several large mammal bones (as yet unidentified) tend to suggest a fair sized campsite or village. No attempts at excavation have here been made.

Conclusion

It is not within the bounds of logic or academic propriety to seriously speculate upon a handful of rather common artifacts recovered at a site quite separated from those experiencing thorough examination, but at least something can al-

ways be said along the "so what" line.

To our knowledge this is the first instance of effigy mound excavation at Rush Lake. It is furthermore the first known instance of an exact location and description of a particular variety of effigy mound in the same area. All other reports have been poorly documented, and greatly lacking in precision. (For a good example of this see: Butterfield, 1880.)

The chipped stone, ground stone, and ceramic materials of this site have been duplicated both by surface recovery and excavations at the Bier and Koehler sites several miles to the southwest. Although many conical type mounds once stood (as late as 1875) upon these two sites, there is no indication of an effigy type having ever been located there. (Armstrong, 1879). The similiarity of artifacts found at these sites and those yielded by the effigy mound tends to suggest that peoples occupying the Krisbaher-Llewellyn site prior to the construction of the panther mound had several traits in common with those of the Bier and Koehler sites. This is the first bit of indirect evidence available for the establishment of a chronology in the Rush Lake region on other than strictly typological grounds. It would place the Bier and Koehler sites as prior to the erection of the effigy mound and perhaps contemporaneous with peoples occupying the Krisbaher-Llewellyn site at least up until its erection. The presence of many conicals and the apparent absence of any animal effigies at the Bier and Koehler sites would further give rise to the notion that conicals may have preceded effigies in this area. (But such conjecture is really indecent!)

Warren Wittry (Dec. 1956) gives dates for otter (776 A. D.) and bear (26 A. D.) type mounds, but no radiocarbon information is as yet available for the panther type, a widely distributed variety. The presence of a Madison Cord impressed (Baerreis, Mar., 1956) vessel in the mound excavated by Wittry and party and the presence of a stylistically similar but technologically superior variety of pottery at the Koehler site plus burial practices involving multiple cremations at the Bier site occur as interesting data upon which to build broader relationships.

Although the above traits all fall within the general Woodland Pattern, the snubnose scraper found upon the surface at at Krisbaher-Llewellyn site indicates the possibility of an Archaic antecedent. This implement has been found in association with gravers, spokeshaves, and basally ground projectile points at the Radke-Dunham, Bier, and Koehler sites. Although these articles have invariably been mixed upon the surface with items of clearly later times, they do suggest an early occupation replaced by or developed into the Woodland culture now most in evidence at Rush Lake. To use that mildewed old neutralizer; "only continued excavation and precise, diligent observation will illuminate the cultural and temporal intricacies of this interesting and productive archaeological region."

Inventory of Recoveries

Excavated:

Rim sherds	2
Body sherds	4
Projectile points	2
Turtle plastron (12 pieces)	1
Flake scrapers	1
Fire charred limestone pebbles	2
Fire broken rock fragments (est. no.)	30
Flint flakes	7
Total	49

Surface:

Body sherds	33
Projectile points	3
Side scrapers	2
Snubnose scrapers	1
Celt fragments	1
Grinding stones	1
Pecking stones	1
Blade fragments	2
Blanks	1
Cores	4

Flint flakes	25*
Hematite fragments	1
Total	75

* No effort was made to get an adequate sample of these.

SITE DESCRIPTIONS, RUSH LAKE

Town of Nepeuskun, Winnebago County, Wisconsin

Wn 2 RADKE-DUNHAM SITE: SE ¼ of the NE ¼ of Sec. 35, Town of Nepeuskun, Winnebago County, Wisconsin. R. 14 E. T. 16 N. A campsite nearly lacking in pottery and having traits reminiscent of Archaic horizons. The Radke part of this site is reported in the **Wisconsin Archeologist**, Vol. 38, No. 1, 1957. The Dunham part of this site yielded a segmented circular fire pit 40 feet in diameter. This feature contained one postmold near its center. The maximum depth of the pits was 26 inches. These pits began at a depth of 2 to 3 inches below the plowline. Geographic coord. 88 deg. 47' 15" W. Long. 43 deg. 54' 00" North Latitude.

Wn 3 BIER SITE: S ½ of the NW ¼ of Sec. 26, Twn. of Nepeuskun, Winn. Co., Wisc. R. 14 E., T. 16 N. A cemetery and campsite yielding three large crematoriums and many surface items reflecting a very broad span of time. They include implements of the Archaic, Woodland and Mississippian periods. This site occupies the present shore of Rush Lake.

Wn 4 KOEHLER SITE: NW ¼ of Sec. 26, R. 14 E, T. 16 N. A very large site on the shore of Rush Lake. Has yielded a fireplace, and one crematorium. Over 80 test pits have revealed nothing else. A very large collection of surface items to include Archaic, Old Copper, Middle Woodland, Effigy Mound, and Mississippian traits.

Wn 5 PRELLWITZ SITE: NW ¼ of the NE ¼ of Sec. 25. R. 14 E, T. 16 N. A surface site on old shoreline overlooking the marsh. No pottery. Probably a small campsite. Stone goods are not earlier than Woodland. No digging at this site.

Wn 6 KRISBAHER-LLEWELLYN SITE: NW ¼ of the NE ¼ of Sec. 13, R. 14 E, T. 17 N. Surface site near shore of Rush Lake and a mound group contained within woods. One panther type mound excavated. Surface site is in vicinity of a presumed historic Winnebago Village (Outlet Village).

Wn 7 OSCAR RADKE SITE: NW ¼ of the NE ¼ of Sec. 34, R. 14 E, T. 16 N. This site once contained many conical mounds, some dug by Thomas Armstrong in 1875. Site is near shore of Rush Lake. Surface materials recovered so far seem all to be of a Woodland character. No digging has been done here since 1875. A large collection is owned by the farmer.

Submitted by Jack Steinbring 1957

BIBLIOGRAPHY

ARMSRONG, THOMAS
1879 "Mounds In Winnebago County, Wisconsin", ANNUAL REPORT OF THE SMITHSONIAN INSTITUTIoN 1879, pp 335-339.

BAERREIS, DAVID A.
1953 "Blackhawk Village Site (Da5), Dane County, Wisconsin," JOURNAL OF THE IOWA ARCHEOLOGICAL SOCIETY, Vol. 2, No. 4, pp. 5-20.

BROWN, CHARLES E.
1908 "Additions to the Record of Wisconsin Antiquities II", THE WISCONSIN ARCHEOLOGIST, Vol. 7, No. 1, p. 31.

BUTTERFIELD, W. C.
1880 THE HISTORY OF FOND DU LAC COUNTY, Chicago, p. 327.

LAWSON, PUBLIUS V.
1903 "Summary of the Archeology of Winnebago County, Wisconsin", THE WISCONSIN ARCHEOLOGIST, Vol. 2, Nos. 2 and 3, pp. 76-85.

STEINBRING, JOHN H. and FARVOUR, FRANKLIN B.
1957 "The Radke Area of the Radke-Dunham Site", THE WISCONSIN ARCHEOLOGIST, Vol. 38, No. 1, pp. 19, 24-28.

WITTRY, WARREN L.
1956 "Kolterman Mound 18 Radiocarbon Date", THE WISCONSIN ARCHEOLOGIST, Vol. 37, No. 4, pp. 133-134.

THE GLOSEMEYER MOUND GROUP WARREN CO., MO.

Gregory Perino

Excavation of the Glosemeyer mounds (Fig. 1) was accomplished in the month of May under the auspices of the Thomas Gilcrease Foundation of Tulsa, Okla. The mounds are located on the farm of Eugene Glosemeyer, near Peers, Missouri, and are located on the north bluff of the Missouri river where Charette creek enters the Missouri valley.

All had been plowed for many years before being put into pasture. The largest, No. 3, seems to be about four feet in height. All of the mounds seemed twice as high as they actually were. There are nine mounds, some are almost completely gone and one has been used for a dam fill. We excavated the first three from the end of the ridge. Very little was found in them. There was some type of burial structure composed of both logs and stone, but no artifacts were found to indicate definitely who the mound builders were.

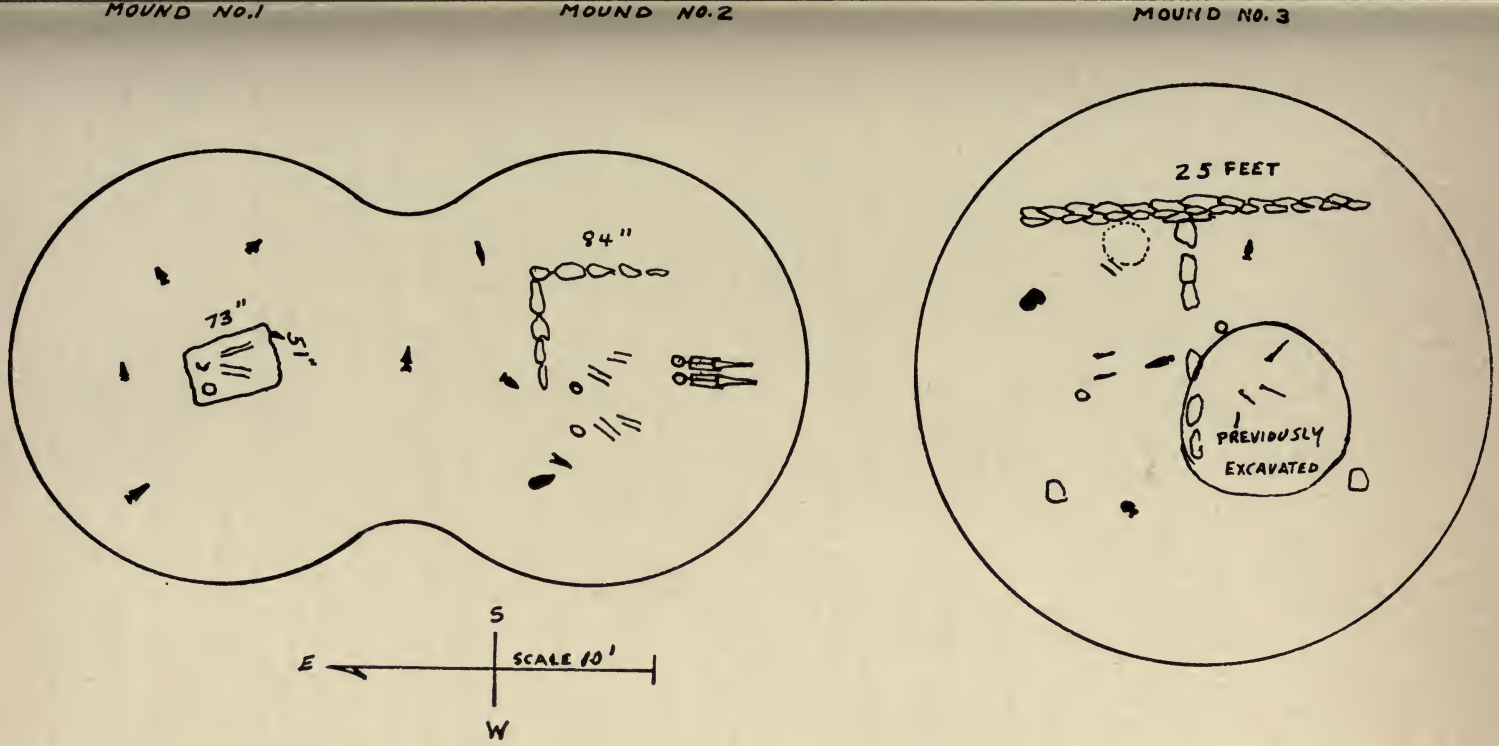


Fig 1. The Glosemeyer mound Group

Hopewell type blades are found in the area and on what may have been the village, but no Hopewell pottery has yet been found. Two small sherds of a thin woodland cord marked variety found on the village indicate a post Hopewellian occupation. One mound exists on the village which is one half mile up Charette creek. It appears to be three feet in height, and was excavated by the owner fifty years ago. He reports finding a large cord-marked conoidal vessel which soon disintegrated.

An interesting feature predating the mound group is the fact that it was constructed on an archaic village and consequently the eight to twenty inches of topsoil under the mounds are important.

The archaic site seems extensive, beginning at mound No. 1 at the end of the ridge and extending northwestward for a quarter of a mile, widening and rising, creating a level surface suitable for such structures as they may have had. There is scattered evidence of occupation on all the ridges up Charette creek.

Mound No. 1 appears to be three feet high and sixty feet in diameter. Actual excavation disclosed a burial on the sod line at a depth of twenty inches. What seems to have been wall trenches were found and uncovered. They were four inches in width,and penetrated the clay subsoil for four inches. Soil in the mound fill over these trenches was burnt in places to the mound's surface, but only above the wall trenches. One charred post was found extending into the wall trench.

The trench formed a rectangular enclosure 51 inches wide and 73 inches long. The burial was badly decomposed and only skull fragments and long bones could be found. These were somewhat scattered about on the floor. A few bones of the feet had been near the southwest wall and were charred when the structure was fired.

Two projectile points and a few large flakes were in the mound fill. The major portion of artifacts however were found under the mound in the original topsoil. These include four projectile points, many large flakes, broken blades, hematite rubstones and a sandstone slab for grinding the hema-

tite. The most oustanding blade is a long narrow side notched, concaved base variety which had filtered down to the subsoil.

Mound No. 2 appears to be two feet high and thirty feet in diameter. The burial floor actually is twelve inches in depth. A well defined rock wall was set into the subsoil on the south and extended to the surface. East of it and at right angles were a few slabs on the sod line, and what appears to be post holes into the subsoil were found at random under the rocks. No complete outline of a structure could be discovered. Two badly decomposed flexed burials were found on the probable floor area, and two extended charred bodies buried eight inches deep at the western edge of the mound had been burnt on the spot.

In the mound fill six inches from the surface was a five inch Dalton point with one ear missing. Topsoil under mound 2 was much deeper. Here was fourteen inches of topsoil containing fifteen potsherds which were rather thick, heavily burnt and all from the same vessel. It is cord marked and has a plain stick impressed rim. Some of these were seven inches deep in the topsoil. Scattered about in the topsoil at various depths we found large flakes of chert, hematite rubstones, and six projectile points. One large unnotched point was six inches in length. One small cube of galena was also found.

Mound No. 3 appeared to be four feet in height but actually had burials on a floor that was thirty-four inches in depth. Its diameter is forty feet. It is built over a structure of which the southern end was composed of limestone slabs. Total length was twenty-five feet. At the wall's center is a stone pier made of several slabs which extend into the subsoil. From this point at right angles extended scattered slabs on the sod line indicating a partition wall. Post holes were found at random. Scattered fragments of human bone on either side of the partition indicated the presence of two burials. A large section of the northwest portion of the mound had been excavated so long ago that the owner has no knowledge of it, although he has lived here all his life. One of the burials had been found and disturbed by the early excavators. Two

feet of a cedar fence post was located just west of center, and although the upper portion was gone, the lower section was in excellent condition.

Top soil under this mound is twenty inches in depth. Many pieces of hematite and one cube of galena were found, including water worn rocks and hammerstones. One crude hematite three quarter grooved ax was found and large flakes and blocks of chert were common. Four side notched blades, some of the bunt type, and six corner notched blades including five basal sections of large oval and square base spears also occurred. One fine five inch needle pointed corner notched blade was found on the clay subsoil. Another blade of an unusual type sometimes referred to as an Afton point also was found but nearer the surface of the topsoil.

There were several indications of fires mostly in the form of small charcoal fragments, some of which had filtered downward eight or ten inches. Only one definite pit was located. It was not more than two feet in diameter, and extended into the subsoil. No artifacts could be found but nearby a six inch section of badly decomposed human bone (probably femur or tibia) and traces of other bone indicated an old burial. These all were near the subsoil.

Little could be found to indicate who built the mounds but one thing seems certain, that the early occupants of the ridge belonged to a Red Ochre culture in the late Archaic horizon. Hematite rubstones were found in unusual amounts together with sandstone grinding slabs. Fifteen sherds from one vessel would indicate a knowledge of ceramics and also date the village as late Archaic.

There are three primary blade types. These are the side notched blades with straight or concave bases. Another is the corner notched variety and the third is the large square or oval based spears of which so many basal sections were found.

How long does it takes for an artifact to filter down through the soil until it rests upon the clay? This can be accomplished in numerous ways but primarily by several natural methods which include growth and decay of roots, and the soil loosen-

ing action of insects, worms, rodents, and frost. All of these methods would take hundreds of years, yet we found two blades directly on the clay under the mounds. The construction of the mounds over such areas as may include artifacts can only contribute to a cessation of the filtering process freezing objects in their path of descent at the time of mound construction.

Figure 1

UPPER MISSISSIPPI POTTERY FROM LAKE POYGAN, WAUSHARA COUNTY

Robert Ritzenthaler and Walter Henning

Two complete pots and one-half of a third (Fig. 1), and two pottery pipes (Fig. 2) were found on the northwest shore of Lake Poygan in Waushara County and reported by Walter Henning of Milwaukee.

The interesting thing about the two complete pots is their

crudity and extreme thickness: the wide rimmed one being 7/16 inches thick and the other 11/16 inches in thickness of sides and bottom. The wide rimmed piece is 5-1/16 inches in side diameter, and the other is 5⅝ inches. The half vessel is of common Lake Winnebago type with scalloped rim and broad incisings down the sides, while the crude vessels have been called "degenerate" Lake Winnebago.

Two disk pipes of pottery but not shell tempered are 3½ inches and 3-1/16 inches in length. Such pipes are rare, never tempered, and have been associated with the Lake Winnebago focus.

Figure 2

Figure 1

OLD COPPER SPECIMENS FROM UPPER MICHIGAN

Robert Ritzenthaler

The four copper specimens pictured here are recorded by their collector, J. T. Reeder, as occurring in Houghton County, Michigan. According to the data on the specimens, the chisel and gouge were part of a cache found near Osceola, while the spud and the blank were from the portage just east of the city of Houghton. The chisel is 6¾ inches in length, the gouge 6 inches in length, the blank 2¾ inches at widest point, the spud 5½ inches in length. These specimen s are presently in the collection of Mr. A. D. Grutzmacher of Mukwanago.

Figure 2
Socket Side of Spud

Those of you interested in the purchase, sale, or exchange of archeological specimens will want to reserve Saturday, September 6th for the annual Dealers and Collectors show at Petrie's Log Cabin Museum on Brown's Lake. Directions: take Highway 11 east out of Burlington for 1½ miles. You will see the display tables in a pleasant grove on your left. Furnished without charge are the display tables, coffee for the early morning crowd, a program of slides and movies, bathing and picknicking.

We are nearing our goal of 500 members with the addition of the following:

Joseph Gillic Jr., Hustisford, Wis.
Stephen W. Young, R. 3, Box 347, Antioch, Ill.
Mr. Ralph C. De Woody, 5805 Old Middleton Rd., Madison, Wis.
Henry Roth, R. 6, Watertown, Wis.
Paul A. Turney, 2243 S. Woodward St., Milwaukee, Wis.
Wilson V. Daring, R. 5, Napoleon, Ohio.

Our apologies to MISS MARGUERITE L. UTZ for the misspelling of her name in our listing of new members in a previous issue.

On May 3rd members of the Society participated in a dig to explore the area in which the Thiensville Red Ochre burial was discovered. No further burials were encountered. While such negative evidence is never exciting, we are satisfied that all burial remains have been removed by the original excavation. Our thanks to the following members for their able help in this project:

Ralph Koeppler
Alan Prill
Robert Snyder
Neil Ostberg
Kirk Whaley
Martin Greenwald
James Bindrick
Paul Turney

Interesting Wisconsin Specimens

ORNAMENTED COPPER POINT

Socket-tang point of the Old Copper culture with rows of indentures. Length 6¼ inches. Found near Hartford. Walter Henning collection.

HOPEWELL PIPE

Stone platform type found by Walter Henning on the south shore of Lake Poygan. Length 2 inches.

September, 1958 Vol. 39, No. 3

NSAS CITY, MO.
BLIC LIBRARY
DEC 2 1958

ABS
Ref

THE WISCONSIN ARCHEOLOGIST

THE BELOIT COLLEGE MOUND GROUP — A PRELIMINARY REPORT, Tyler Bastian 15

SOME CARBON 14 DATES FOR THE WISCONSIN OLD COPPER CULTURE, Robert Ritzenthaler 17

COMMENTARY ON CARCAJOU CARBON 14 DATES Robert L. Hall 17

LAKE ARCHAIC CULTURE AND THE ALGOMA BEACH IN THE LAKE MICHIGAN BASIN, George I. Quimby 17

POSSIBLE EVIDENCE OF A MAT-WRAPPED BURIAL IN WISCONSIN, Robert Ritzenthaler 18

THE KRASKE VILLAGE SITE AND MOUND GROUP, Gregory Perino 18

INTERESTING WISCONSIN SPECIMENS 18

COLLECTOR'S CORNER 19

WISCONSIN ARCHEOLOGICAL SOCIETY

Milwaukee, Wisconsin

Incorporated, 1903

For the purpose of advancing the study and preservation of Wisconsin Indian Antiquities.

Meets every third Monday of the month at the Finney Neighborhood Library, Sherman and North Avenue, Milwaukee. (Except during July and August.)

OFFICERS

PRESIDENT

Arthur Niehoff

VICE-PRESIDENTS

H. W. Cornell — Ellis Burcaw — Herman O. Zander

Laurence Kracht — Dr. D. A. Baerreis

DIRECTORS

Dr. E. G. Bruder — Kermit Freckman

ADVISORY COUNCIL

Frank Achen
H. S. Breitwish
Dr. E. G. Bruder
William Curkeet, Jr.
Edward Eichenberger
Kermit Freckmann
William Godfrey
Robert L. Hall
Robert Howard
Zida C. Ivey
Mrs. Theo. Koerner
W. C. McKern
Robert Menten
William Oestreich
Neil Ostberg
Louis Pierron
Allen Prill
Arthur W. Quan
J. Ringeisen, Jr.
Chandler W. Rowe
Chas. G. Schoewe
Paul Scholz
Lincoln Smith
Kirk Whaley
Dr. A. C. Whiteford
Warren Wittry

TREASURER

Martin Greenwald

SECRETARY

Phil H. Wiegand

EDITOR

Robert Ritzenthaler

MEMBERSHIP FEES

The Wisconsin Archeologist is distributed to members as part of their dues.

Life Members, $50.00 — **Endowment Members, $500.00**

Sustaining Members, $5.00 — **Annual Members, $2.00**

Institutional Members, $2.00

All communications in regard to the Wisconsin Archeological Society and contributions to the Wisconsin Archeologist should be addressed to Phil H. Wiegand, 1276 N. 63rd Ct., Wauwatosa 13, Wis. Entered as Second Class Matter at the Post Office at Lake Mills, Wisconsin under the Act of August 21, 1912. Office of Publication: 204 N. Main St., Lake Mills, Wis.

THE WISCONSIN ARCHEOLOGIST

Published Quarterly by The Wisconsin Archeological Society

New Series

MILWAUKEE, WISCONSIN, SEPTEMBER, 1958

THE BELOIT COLLEGE MOUND GROUP (Ro 15) – A PRELIMINARY REPORT

Tyler Bastian
Beloit College

Preface

For over 110 years the Beloit College Mound Group has been an object of inspiration and surmise to those who have trod the campus at Beloit College. It is only in the past 16 years, however, that careful excavations of the mounds have begun to place them in true perspective. This article is an effort to present the known data concerning the site. Early references are summarized but the main part of this paper is concerned with the results of recent archeological investigations.

The writer has been dependent on many people for the completion of this report and he expresses his sincere appreciation to them all. The following have been especially helpful: Mr. Robert C. Alberts provided much inspiration; Mrs. Helen L. D. Richardson helped locate early references; Dr. Moreau S. Maxwell provided data on mounds 2, 3 and 4; Dr. Andrew H. Whiteford and Dr. William S. Godfrey, Jr., gave assistance in various ways; Dr. William A. Ritchie commented on the manuscript; and the Milwaukee Public Museum staff, especially Dr. Robert Ritzenthaler, aided in identifications and manuscript preparation. Many Beloit College students have assisted in the various excavations. Mr. Norman F. Barka was especially helpful to the writer during the excavation of mound 6.

Introduction

The Beloit College Mound Group is located on a glacial outwash terrace 40 feet above the east shore of the Rock River and ½ mile above the mouth of Turtle Creek in Beloit,

Rock County, Wisconsin.[1] This terrace forms a broad tongue of high land bounded by the Rock River on the west, by Turtle Creek on the east, and pinching out at the confluence of these two rivers near the Illinois-Wisconsin state line. A number of sites similar to the Beloit College Mound Group were situated on this same terrace (Becker, 1919; Buell, 1919; Peet, 1881 and 1890), but many no longer exist due to the expansion of the city of Beloit. The site has had a cover of oak-hickory woods for as long as white man has known the area. Small game was probably abundant prior to the white invasion.

The site originally consisted of about 27 circular,[2] oval, linear and effigy mounds. Only 23 remain visible today and several of these have been damaged by construction and landscaping. (See figure 1 and table 1.)

Early Reports

The development of Mid-western archeological thought, popular and professional, is reflected in the many references to the Beloit College Mound Group. The earliest notice was penned in 1848 by Joseph Emerson, Beloit College's first president.[3] He wrote that the college campus was "sprinkled with oaks and little mounds built by the unknown race. One close by is in the shape of a turtle — body, legs and tail perfectly distinct." There were "three long ones on the edge of the bluff in front of the college — the turtle & another long one on a prominence to the south & several round & oval ones scattered" about the campus.[4] Emerson was so concerned about the preservation of the mounds that he "gave a hundred dollars to Beloit College, with a proviso that the money should revert to his heirs as soon as a certain mound (which mound is not known) in the college campus was disturbed" (Butler, 1876: 98).

Lapham's classical work, **The Antiquities of Wisconsin** (1855), contains a map, made in 1852 by Stephen P. Lathrop, of a portion of the site (Plate LIV). Lathrop's map is the only evidence that mound 1 ever existed. Reference to my figure 1 shows that the inclusion of mound 1 places four linears in the area where Emerson refers to only three mounds. The site of mound 1 is partly covered by the Student Union

but contemporary accounts of the erection of buildings on this spot do not mention the mound.

In August, 1858, a communication from Beloit reported that a skeleton had been found below the level of the surrounding surface "in a circular mound near Beloit College." [5] In that same year, "some interesting bones" were recovered from a circular mound disturbed in the erection of South College and they were preserved in the Logan Museum of Anthropology at Beloit College (Buell, 1919:122). (The bones can not now be located.) Buell (op. cit.) cites "a legend that when one of the first buildings was located on the site of a mound the earthwork was carefully removed and its form restored on the adjacent surface." In 1890 Stephen Peet mentioned that one of the mounds "was excavated a number of years ago and yielded bones but no record was made of it" (Peet, 1890:227). Another writer says: "Only two of the mounds have been opened — the one under the Art Hall (now South College), and the Academy mound (mound 9) where a skeleton was also found, probably an interment by later Indians" (Dixon, 1905:342). None of the early references is specific and a field check of Lathrop's map of 1852 showed that it is not sufficiently accurate to determine if any mounds have been moved.

A city engineer, James Wilson, Jr., was the first to make a map showing the effigy, mound 7, but he has it delineated at a right angle to its present orientation and he does not show the adjacent linear, mound 8. [6] The effigy mound was "partly obliterated" in the 1870's (Anonymous, 1876:10; Thomas, 1891:241) and in 1882 "a prep., under proper superintendence, restored the legs and tail of the venerable turtle, near the Observatory, which the former owner of the land had heedlessly plowed up several times" (**Round Table**, [7] Oct. 20, 1882, Vol. XXIX, No. 3, p. 29). The mound may have been incorrectly restored or, considering several other obvious errors in Wilson's map, it may have been carelessly recorded.

"It is said also there were formerly mounds below the bluff, near the water's edge, . . . and that these also were in the turtle shape" (Peet, 1881:99). At a later date Peet states that there was a turtle mound "at the foot of the bluff near the

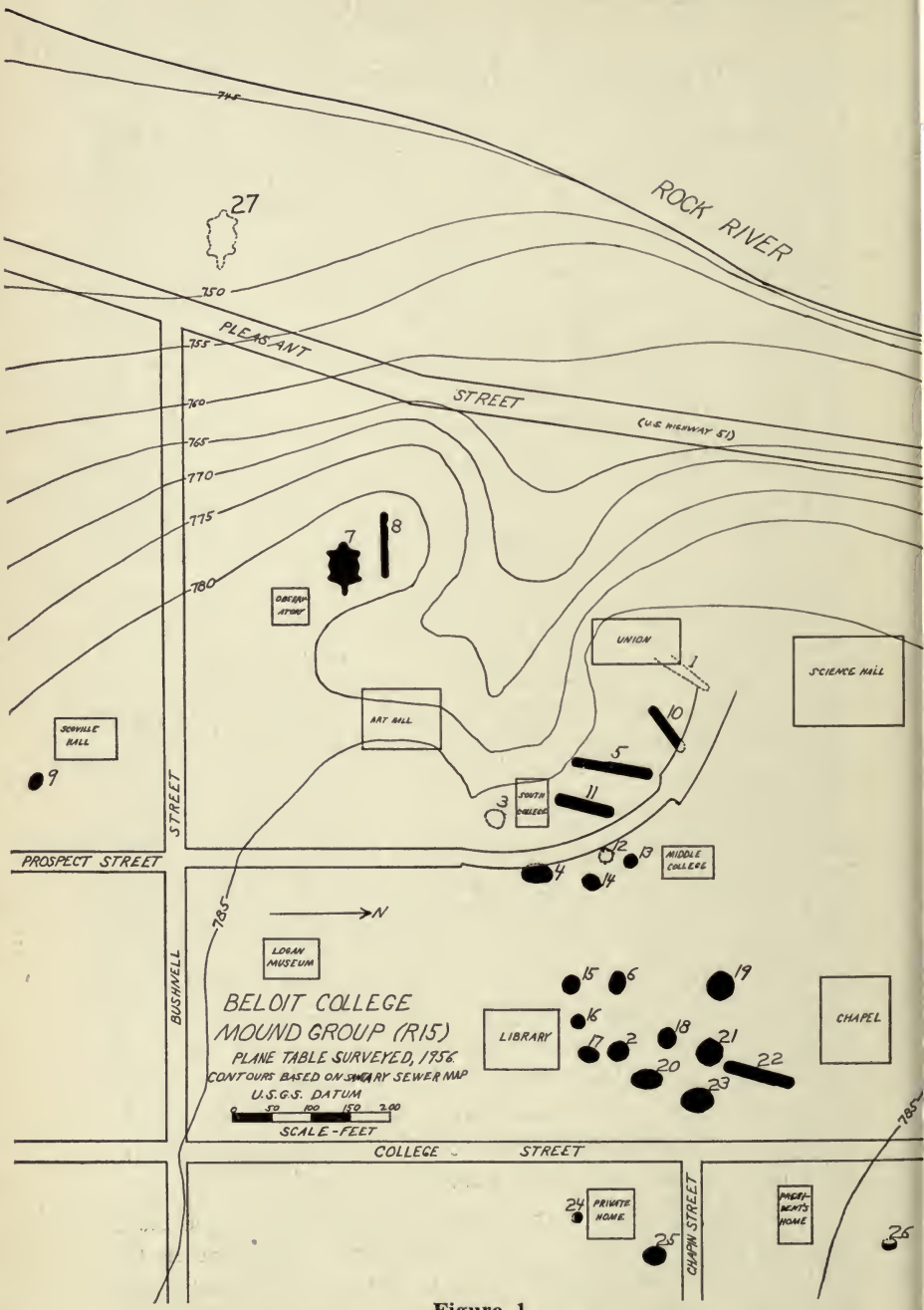


Figure 1

The Beloit College Mound Group. Dotted lines indicate mounds, or portions of mounds, which have been destroyed.

TABLE 1
The Beloit College Mound Group

External Features of the Individual Mounds

Number		Dimensions * (in feet) north south	east west	height
1	Linear. (See page 4.)	?	17?	?
2	Circular; excavated. (See page 8)	32	30	4.1
3	Circular; excavated; (See page 10.) removed by the college grounds crew in 1954 because it was difficult to grow grass on it. * *	28	25	2.5
4	Oval; excavated. (See page 12.)	42	24	4.3
5	Linear; excavated. (See page 13.)	98	17	1.2
6	Oval; excavated. (See page 14.)	20	29	1.7
7	Effigy; mounds resembling it have been reported. (See **Wisconsin Archeologist**, Vol. 2, o. s., p. 57, fig. 5; Vol. 8, o. s., p. 88; Vol. n. s., pp. 11-12, Plate 1; Vol. 37, n. s., p. 79, fig. 2; and Peet, 1890:311, fig. 211).	42	61	3
8	Linear; low and irregular, poorly preserved	10	80	1
9	Oval; large tree on top.	18	25	2
10	Linear; relatively steep sides; north end destroyed by construction in 1948. * *	61	15	1.7
11	Linear; appears to have been trenched near the center.	70	16	1.5
12	Circular; removed by the college grounds crew in 1954. * *	20?	20?	1?
13	Circular	21	19	1.1
14	Circular; appears to have been pitted	28	25	2
15	Circular; large stone with inscription "88" lies on top.	23	23	2.5
16	Circular	17	18	1.5
17	Oval; large tree on east edge,	26	18	1.7
18	Circular	23	27	2.4
19	Circular; two large trees on mound.	34	39	1.7
20	Oval; possibly pitted.	40	22	2.2
21	Circular; possibly pitted.	37	42	3.3
22	Linear; north end damaged by reconstruction of Eaton Chapel in 1954; restored.	86	18	1.3
23	Oval; bronze plaque on mound reads: Indian Mounds Effigy, Linear and Conical Types Ancient Home of the Winnebago Marked by the Beloit Historical Society March 15, 1924	40	32	2.8
24	Circular; small, poorly preserved.	13	14	1
25	Circular	31	26	1.7
26	Circular; partly destroyed.	17	8+?	1.7
27	Effigy. (See page 6.)	7	?	?

* Dimensions of oval, linear and effigy mounds are of the long and narrow axes.

* * Letters from Dr. Andrew H. Whiteford to Beloit College, dated April 30, 1948, and June 5, 1954, at Beloit. Carbon copies on file at the Logan Museum of Anthropology.

river bank" (Peet, 1890:255). He reproduces Wilson's map and adds mound 27 but he shows it circular rather than in effigy form. At another time Peet recalls the days when he studied Latin while lying on "a turtle mound which was situated close to the bank, its head looking toward the river" (**Round Table**, Jan. 26, 1906, Vol. LII, No. 15, p. 168).

In 1904 the Logan Museum Prize was awarded to Walter H. Dixon for his paper on the Beloit College Mound Group. His paper has not been located and published extracts (Dixon, 1905) provide no new data. Dixon had a number of interesting ideas concerning the mounds, one being that the linears were in actuality the bodies of effigies whose almost invisible appendages could be seen only by very careful observation. [8]

On April 16, 1905, Charles C. Brown wrote: "Several mounds at Beloit on College ground explored by Dr. Collie and students at this date, no results of particular interest." [9] Perhaps Collie was inspired by Dixon's paper but again we do not know which mounds were dug or what was found.

Recent Excavations

Mound 2

The first effort to carefully excavate and record a mound in the Beloit College Mound Group was made in April and May of 1942 by Dr. Paul H. Nesbitt. According to Professor Whiteford, Beloit old timers asserted that the college's first janitor, Johnny Pfeffer, built the mounds by dumping ashes about the campus from the college's pot bellied stoves. Nevertheless, Dr. Nesbitt and his crew of eager students braved the dangers of a pending scientific farce.

The mound axes were 30 and 32 feet, the latter in a north-northeast and south-southwest direction. Its maximum height was 4.1 feet. The mound was laid off in five foot squares, and two five foot trenches, meeting at a right angle, were carried to the center of the mound. These trenches were taken down to the glacial outwash till which was struck 5.95 feet below the apex of the mound or 1.85 feet below the surrounding surface. An old humus zone beneath the mound was not apparent. References to "two stones, possibly artifacts." [10] are made in the field notes but further information is not available. Near the center of the mound a "vertebra ? of a small an-

imal" was noted .7 of a foot below the surface of the mound and "evidence of charcoal" was noted 4.25 feet below the surface of the mound.

A flexed burial was found 4.2 feet below the apex of the mound and .7 of a foot below the original ground level in a shallow, oval pit which was "lined with water worn stones of different sizes." [11] The burial was on its left side, heading south and facing west. Near the knees of this burial was a bundle burial, minus the skull. (See figure 2.) The fragmentary remains made it very difficult for the writer to determine the age and sex of these individuals. A comparison

Figure 2
Mound 2, bundle and flexed burials; looking northeast.

with the adult skeleton from mound 6 suggests that they were adult females slightly over five feet tall. The individual in the primary burial was about 35 years old at death as determined by suture closure. About 1.5 feet west, and at the same level as the burials, some fragments of bone, thought to be vertebrae, were noted.

The legend of Johnny Pfeffer had been thoroughly shaken, and for the elucidation of those attending the spring graduation exercises at Beloit College the burials were covered with a makeshift case of storm windows. This temporary display was ruined by a heavy rain in June and Professor Whiteford removed the skeletal remains to the museum.

Mound 3

During April and May of 1947 mound 3 was excavated under the direction of Dr. Moreau S. Maxwell. This nearly circular mound measured 28 feet north and south, 25 feet east and west, and was 2.5 feet high. A five foot grid system was superimposed upon the mound and two five foot trenches were cut into it producing an L-shaped excavation. Some stratigraphy was observed. The three uppermost strata (totaling 3 inches thick near the apex and 10 inches thick at the periphery of the mound) were deposited in historic times as evidenced by the cinders (recalling the story of Johnny Pfeffer) and a brick in the sandy loam comprising the lowest of these strata. The mound fill beneath these strata was described as a dark loam which was indistinguishable from the presumably undisturbed deposits beneath the mound. An old humus zone was not apparent. The glacial till was 3.5 feet below the apex of the mound and 1 foot below the surrounding ground.

"One small, grit-tempered, cord-roughened sherd" was found in the mound fill. The mode of transporting the dirt to the mound was revealed by the presence of a "basket load" lying on the floor. The size of the load was six inches wide, twelve inches long, and about two inches thick.

An oval, straight-sided pit located four feet north of the center of the mound contained a single burial. The east-west diameter of the pit was 3.6 feet and its north-south diameter

was 2.1 feet. It penetrated into the glacial till one foot and the lowest point on its uneven floor was about 2 feet below the level of the ground surrounding the mound and 4.5 ft. below the top of the mound. At 1.2 feet above the observed top of the pit was a horizontal gravel lens 7 to 8 feet in diameter and up to 3.5 inches thick. The gravel, "unquestionably derived from glacial drift," was not mounded up as seen at some sites where the spoil pile from the aboriginal excavation of the pit was allowed to remain around the pit.

Since none of the cross-sections in the field notes intersects the burial pit it is not known whether the gravel lens was continuous over the pit. The well preserved skeleton, described as a 19 to 21 year old female, lay tightly flexed on its left side on the floor of the pit. (See figure 3.) The head of the skeleton was to the east and it faced south. The left foot bones were missing but the reason was unexplained. "Two small, thin, grit-tempered cord-marked sherds" were found in the pit fill. Dr. Maxwell made a flesh restora-

Figure 3

Mound 3, burial looking northeast

tion of the skull and it may be seen in the Logan Museum of Anthropology at Beloit College.

Mound 4

One of the larger mounds was excavated in April, May and June, 1948, under the supervision of Dr. Maxwell. This north and south trending, oval mound measured 42 feet by 24 feet and was 4.3 feet high. Most of the western half was excavated. Although stratigraphy was present it was markedly irregular. The notes do not indicate the presence of an old humus zone beneath the mound. The mound fill contained a "small animal pelvis;" twelve thin, grit-tempered, cord roughened sherds 4.8 feet below the apex; a small triangular, stemless, flint projectile point (figure 4); and 4.6 feet below the apex were "scattered, poorly preserved human bone fragments."

The irregular profile and the scattered human bones suggest that this mound had been disturbed prior to Maxwell's excavation. Certain early references (see page 5) suggest that a mound was moved during the construction of South College, but the lack of old humus and the depth of the sherds and bones cast serious doubt that this was the mound.

Mound 5

The only linear mound that has been excavated was dug in the spring of 1953 under the supervision of Dr. William S. Godfrey, Jr. The mound is 98 feet long, 17 feet wide and 1.2 feet high. According to Professor Godfrey, a trench was dug down to the glacial till and into the southern end of the mound until a disturbed area, probably the "old road" indicated on Lathrop's map of 1852 (Lapham, 1855, Plate LIV), was encountered in the medial portion of the mound. Two cross trenches were also dug in the excavated (southern) half of

Figure 4
Mound 4, Projectile point from the fill.

the mound. An old humus zone beneath the mound was absent and an unconformity indicating the base of the mound was not noted. Dr. Godfrey detected a possible burned hearth consisting of a few fired stones and scattered small specks of charcoal at the probable base of the mound.

Mound 6

The most recent excavation was begun in October, 1955, under the supervision of Mr. Robert C. Alberts. Excavation was continued intermittently until it was completed in October, 1956, under the writer's direction. The mound was oval; 20 feet north and south, 29 feet east and west, and 1.7 feet high. A five foot grid system was superimposed upon it, and 12 squares, or about 65% of the area of the mound, were dug down to the glacial till. A five foot trench was dug from the north side to the center by cutting a vertical face with mattocks. From the center to the south side the trench was continued, but it was dug in six inch horizontal levels by shaving with shovels. Five other squares were shaved down horizontally without regard to levels and two more squares were dug in six inch levels with a trowel. About 1/5 of the

Photo by R. C. Alberts

Figure 5
Mound 6, general view of present environment, looking southeast.

excavated material was sifted with ¼ inch mesh screens. (See figure 5.)

Neither an old humus zone nor an unconformity revealing the base of the mound was visible. The glacial outwash till was encountered 3.2 feet below the top of the mound or 1.5 feet below the present surface of the surrounding ground. This till is composed of rounded, waterworn pebbles and is overlaid by a thin stratum of sandy, dark yellow clay which graded imperceptibly into a dark mottled brown, clay-loam of which the body of the mound was composed. This, in turn, graded into, or was terminated by, the present humus.

Many of the cultural materials were noted **in situ** and their positions were recorded. The lowest evidence of human occupation occurred 2.5 feet below the mound apex or .8 of a foot below the surface of the surrounding ground. Since the present humus zone near the mound is about .6 of a foot thick the depth of the cultural material indicates that the mound was built after the old humus zone had been removed. However, the mound may have been built on some previously deposited debris.

Scattered indiscriminately through the mound fill were 213

Figure 6
Mound 6, representative cord marked sherds from the fill. Note the decorated sherd in the upper left.

thin sherds of which only 9 are larger than 2 square centimeters. An analysis of the pottery showed no differences in kind or in distribution within the mound. Many are cord-marked and one has parallel cord impressions and punctations. (See figure 6.) In color the pottery tends to be orange or buff; many sherds have a black interior side, and a few are entirely dark. The paste is compact and the hardness is 2. The non-plastics consist of small (less than 1 mm) rounded grains of quartz. Occasional angular pieces of flint and other stones were noted in a few specimens. The sandy, dark yellow clay underlying the mound contained an abundance of small rounded quartz grains and occasionally small fragments of other stones. If this, or a similar deposit, represents the source of clay for the pottery under discussion, temper would not have to be added as a sufficient quantity of non-plastic material was already present in the paste.

Eight chipped flint artifacts, comprising 3 points, 3 scrapers, and 2 retouched flakes, were included in the fill. (See figure 7.) Small flakes of white, pink, gray and brown flint, and quartzite, were common — 299 were recovered.

Figure 7
Mound 6. chipped stone artifacts from the fill. Retouched flakes not shown.

A human right 3rd metatarsal in excellent condition was found without association 5 feet from the center of the mound and 1.1 feet below the surface. Three unidentified non-human bone fragments, also in good condition, were found in the fill.

Charcoal occurred throughout the mound, but only in rare instances were there more than a few specks. Two samples 1.5 feet apart, 1.4 feet below the mound surface, lying on the probable mound floor and 3 to 5 feet northeast of burial 1 were large enough for C14 dating and they have been submitted, through the courtesy of Dr. James B. Griffin, to the Radiocarbon Laboratory of the University of Michigan Memorial-Phoenix Project.

The refuse in the mound indicates that the fill came from a living area; however, no habitation sites are known in the immediate vicinity. "Some flint and other stone implements have been reported as found here in past years." (Brown, 1929: 86.)

Two burials were encountered near the center of the mound. Evidence of a pit was absent in both cases but the character

Photo by R. C. Alberts

Figure 8
Mound 6, flexed burial of child, looking east.

of the mound fill was such that if pits had been present they may not have been easily seen. A tightly flexed burial of a 9 to 12 year old child of undetermined sex was located 1.3 feet below the mound surface and lay at the level of the surrounding surface. (See figure 8.) Assuming that an old humus zone was removed, this burial lay above the cleaned floor. The very poorly preserved skeleton lay on its right side and was headed south-southwest. The skull was entirely decomposed but the teeth were still in their proper relative positions. The second burial was 2 feet from the first, 2.2 feet below the mound surface and lay 1.1 feet below the level of the surrounding ground. Although the burial was completely articulated, it was so tightly flexed in an unnatural position, lying face down, that the individual may have been in an advanced state of decomposition before it was deposited in the grave. (See figure 9.) The skeleton headed west and was a very brachycephalic male about 30 years old and around 5' 7" tall.

An irregular group of stones (see figure 10), located .3 of a foot below the mound floor and about 3 feet northeast of the

Photo by R. C. Alberts

Figure 9
Mound 6, flexed burial of adult, looking south.

Photo by R. C. Alberts

Figure 10
Mound 5, stone altar (?). Lower stones are out of situ.

first burial, is reminiscent of the altars described by McKern (1928:261-263). Although some of the stones may be fire-cracked they were not associated with any ash, charcoal, or discolored earth. The source of the stones was probably the large pebbles of the local glacial till.

A few groups of small, weathered dolomitic pebbles were noted at various levels in the mound. There was a particularly large concentration filling cavities resulting from a recently decayed tree. One of these groups is shown in the upper right corner of figure 9.

Summary

Excavation of four circular and oval mounds and one linear mound in the Beloit College Mound group has revealed simple structures containing scanty artifacts scattered indiscriminately through the mound fill. The source of fill (especially evident in mound 6) was a now undisclosed camp site. An old humus zone beneath the mounds is absent in all cases, indicating that it was removed. An unconformity at the base of the artificial structures was not observed. Structurally the mounds resemble those at the Kletzien Site (McKern, 1930).

One primary flexed burial occurred in a sub-mound pit and probably the flexed adult in mound 6 and the burials in mound 2 were in shallow pits. The child in mound 6 apparently lay above the floor. There was no pattern of burial orientation and no funerary objects. One circular, and possibly the linear, may have contained stone altars.

The stone artifact assemblage is Woodland and the ceramics closely resemble the type called Madison Cord Impressed (Baerreis, 1953: 12-15). The artifacts may be the refuse of an earlier people than the mound builders.

Conclusions

Hypotheses regarding the cultural affiliation of the Beloit College Mound Group are tentative but there is little doubt that the site belongs to the Effigy Mound Aspect of the Lake Michigan Phase of the Woodland Pattern. This site is of special interest to students of Effigy Mound Culture because of its geographically intermediate position between the classic effigy mound area of Wisconsin and the Hopewellian influenced effigy mounds of Northern Illinois. The special traits

reported from the Northern Illinois effigy mound sites such as wooden structures, limestone slabs and chunks, and liquid clay associated with burials, and ash-clay beds on floors (Bennett, 1945: 109-112), are absent in the Beloit College Mound Group which conforms to the Effigy Mound culture of Wisconsin (Rowe, 1956). It is certain that there will be further excavation at this site so it seems best to await further information before attempting more precise relationships and cultural reconstruction.

BIBLIOGRAPHY

ANONYMOUS
1876 **Historical Sketch of Beloit College.** Prepared for the National Centennial Exposition for 1876. Atwood and Culver, Madison. Mrs. Helen L. D. Richardson believes that this was written by A. L. Chapin.

BAERREIS, DAVID A.
1953 "The Blackhawk Village Site, (Da 5) Dane County, Wisconsin." **Journal of the Iowa Archeological Society**, Vol. 2, No. 4, pp. 5-20, McGregor, Iowa.

BECKER, ROBERT
1919 "Turtle Creek Mounds and Village Sites." **Wisconsin Archeologist**, Vol. 12, o. s., No. 1, pp. 7-20, Milwaukee.

BENNETT, JOHN W.
1945 **Archaeological Explorations in JoDaviess County, Illinois.** University of Chicago Press.

BROWN, CHARLES E and THEODORE T. BROWN
1929 "Indian Village and Camp Sites of the Lower Rock River in Wisconsin (Logan Survey)." **Wisconsin Archeologist**, Vol. 9, o. s., No. 1, pp. 7-93, Milwaukee.

BUELL, IRA M.
1919 "Beloit Mound Groups." **Wisconsin Archeologist**, Vol. 18, o. s., No. 4, pp. 119-151, Milwaukee.

BUTLER, JAMES DAVIE
1876 "Prehistoric Wisconsin." **Collections of the State Historical Society of Wisconsin** Vol. 7, pp. 80-101, Madison.

DIXON, WALTER H.
1905 "The Mounds on the College Campus." **Round Table**, June 21, 1905, Vol. XXII, pp. 341-344.

LAPHAM, I. A.
1855 **The Antiquities of Wisconsin.** Smithsonian Contributions to Knowledge, Vol. 7, Art. 4, Washington, D. C.

McKERN, W. C.
1928 **The Neale and McClaughry Mound Groups.** Bulletin of the Milwaukee Public Museum, Vol. 3, No. 3, pp. 213-416, Milwaukee.
1930 **The Kletzien and Nietschke Mound Groups.** Bulletin of the Milwaukee Public Museum, Vol. 3, No. 4, pp. 417-572, Milwaukee.

PEET, STEPHEN D.
1881 "The Military Architecture of the Emblematic Mound Builders." **American Antiquarian**, Vol. III, No. 2, pp. 81-101, Chicago.
1890 **Emblematic Mounds and Animal Effigies.** American Antiquarian Office, Chicago.

ROWE, CHANDLER W.
1956 **The Effigy Mound Culture of Wisconsin.** Milwaukee Public Museum. Publications in Anthropology, No. 3, Milwaukee.

THOMAS, CYRUS
1891 **Catalogue of Prehistoric Works East of the Rocky Mountains.** Bureau of American Ethnology, Bulletin 12, Smithsonian Institution, Washington, D. C.

FOOTNOTES

1 The site is precisely located in the SW ¼ of section 36, T. 1 N., R. 12 E., of the 4th principal meridian.

2 In this paper "circular" is used in place of the conventional term "conical" because it is more consistent with the terms oval, linear, and effigy which describe the floor plan of a mound. "Conical" refers to the cross-sectional form and the mounds are not, if they ever were, true conicals.

3 The city and Beloit College were founded in 1836 and 1848 respectively. A search for early references in city newspapers did not seem warranted but the college newspapers were searched.

4 Letters by Joseph Emerson written to his father on May 26 and July 13, 1848, from Beloit. On file in the Beloit College Archives.

5 Letter by E. F. Hobart written to L. C. Draper on August 7, 1858, from Beloit. On file at the Wisconsin State Historical Society; file WIS-MSS HB, Box 38.

6 Wilson's map was published in Anonymous, 1876: 9; Peet, 1881: 98 and 1890:255, Fig. 164.

7 The **Round Table** is the student newspaper at Beloit College.

8 Some of Dixon's drawings are on file at the Wisconsin State Historical Society; file: WIS-MSS HB, Box 38.

9 Unpublished list of archeological sites in Wisconsin by Charles C. Brown. On file at the Wisconsin State Historical Society; file: WIS-MSS HB, Box 38.

10 All quotations used in mound descriptions are from the field notes unless otherwise indicated.

11 The existence of a stone lining is not mentioned in the field notes but is partially shown in photographs (see figure 2) and is mentioned in a letter by Dr. Nesbitt to Dr. John W. Bennett dated May 13, 1942, from Beloit. A carbon copy of the letter is on file at the Logan Museum of Anthropology. It is also referred to in the **Beloit Daily News**, 1942, Vol. 57, No. 103, p. 1. The lining apparently was not confused with the glacial till since the burial is reported to have occurred several inches above the till.

SOME CARBON 14 DATES FOR THE WISCONSIN OLD COPPER CULTURE

Robert Ritzenthaler

Two radiocarbon dates for Old Copper have been recently released by the University of Michigan Memorial-Phoenix Project Radiocarbon Laboratory. The test on human bone found in association with copper artifacts at the Osceola site, Grant County, Wisconsin produced a date of 3450-250

(years ago). The second date obtained from human bone from the Reigh site in Winnebago County is 3660-250.

We now have radiocarbon dates for all three of the Old Copper cemeteries in Wisconsin. Oconto, with dates of 7400 and 5600, rates as the oldest with Reigh site next, and Osceola as the most recent.

This writer thought the Reigh site date to be about what was expected, but was surprised at the recency of the Osceola one.

COMMENTARY ON CARCAJOU CARBON-14 DATES

Robert L. Hall

Lincoln-Tallman Museum, Janesville, Wisconsin

Between June and November of 1957 the Wisconsin Archeological Society sponsored the excavation of a portion of the so-called "White Crow village" on Carajou Point, Lake Koshkonong, in Jefferson County. Inspection of surface collections in several museums seemed to confirm the identification of the site as that of a historically documented Winnebago village of the period 1828-1832.

From the start of the excavation, however, it became apparent that the bulk of the cultural material antedated the White Crow occupation. More recent analysis of charcoal samples by the University of Michigan radio-carbon laboratory suggests the intermittent occupation of the site by the same or related peoples for over 800 years.

Four charcoal samples were submitted by the writer, of which three were satisfactory for isotope analysis. A date of A. D. 1028 plus or minus 250 years was determined for charcoal remains of a white oak post centered exactly within a rectangular house pattern of wall-trench construction. A date of A. D. 998 plus or minus 250 years was determined for charcoal lumps recovered from a refuse pit within the house outline. The average date o A. D. 1013 is considered to fall within an early phase of the occupation characterized by a culture intermediate between Upper Mississippi and Middle Mississippi. Internal evidence at the site itself does

not suggest whether the mixture is the result of a contact situation of of an Upper Mississippi culture emerging from an Old Village-Aztalan base.

A later date of A. D. 1528 plus or minus 250 years was determined for charcoal within a refuse pit in a different excavation unit. The culture of the inhabitants at this time was Upper Mississippi but with no evidence of the line-and-punctate pottery decoration diagnostic of late Upper Mississippi cultures in Wisconsin.

The dates of A. D. 998 and 1028 for early Carcajou are not easily evaluated but are consistent with published and unpublished data from other Wisconsin sites. The nature and variety of Mississippi pottery within the fill of mounds of the Kratz Creek, McClaughry and Diamond Bluff effigy groups suggest many centuries of contemporaneity of Mississippi and Late Woodland peoples. It seems quite possible that the colonization at Aztalan marks the introduction of Mississippi **culture** to Wisconsin, but that there are antecedents for one variety of Mississippi **pottery** within an earlier horizon.

LATE ARCHAIC CULTURE AND THE ALGOMA BEACH IN THE LAKE MICHIGAN BASIN

George I. Quimby
Chicago Natural History Museum

In a previous article in the Wisconsin Archeologist (Quimby, 1957) I described an assemblage of stone and copper artifacts from Port Washington, tentatively assigned the complex to the Old Copper Culture, and assumed that this assemblage antedated the end of the Nipissing stage of the Upper Great Lakes.

I was wrong. The Port Washington find is not part of the Old Copper Culture and is not only later than the Nipissing stage but is also later than the Algoma stage of high

---

* Editor's note: Both the Port Washington and Molash Creek finds can be classified as Red Ocher Culture. Mr. Quimby and the Editor are working on a paper dealing with definition, geographical and temporal position of Red Ocher.

water levels in the Upper Great Lake region. The evidence for this is as follows.

In 1898 a group of stone and copper artifacts similar to the Port Washington assemblage was found near the bank of Molash Creek in Manitowoc County, Wisconsin (Brown, 1907, p. 60; 1915, p. 181; and Falge, 1915, p. 150. * This find, part of which is illustrated in the Wisconsin Archeologist, Volume 6, Number 2, Plate 5, consisted of a leaf-shaped blade of chipped flint 10¼ inches long; a similar leaf-shaped copper blade about 5 inches long; at least 4 chipped flint projectile points with stems that have parallel or nearly parallel sides; about 165 leaf-shaped "blanks" (probably blades or scrapers) ranging in length from about 2½ inches to about 3½ inches; 1 stone bead; 64 small copper beads; 46 large copper beads; and fragments of human bones. The copper blade showed evidence of a cloth wrapping and the bones and several of the flint artifacts were stained with red ocher.

Like the Port Washington the Molash Creek hoard was associated with a human burial. The bones and artifacts, when found, lay in sandy soil and were partly exposed by wind erosion.

Molash Creek (see Manitowoc Quadrangle Map, U. S. G. S., 1954) also called Melarsh Creek (Brown, 1907, p. 69) and Molasses Creek (Falge, 1915, p. 150) is about 2 miles north of the city of Two Rivers. The locus of the find, near the bank of Molash Creek one half mile from its mouth is in section 29, R 25 E and T 20 N, a part of Point Beach State Forest.

In July of 1958, with the permission of Mr. O. Coener, the ranger in charge, I traversed that part of Molash Creek within the boundary of Point Beach State Forest and took elevations of the Creek banks with a hand level. By these means I determined to my satisfaction that the locus of the Molash Creek find must be at a level lower than the water plane of the Algoma stage of the Upper Great Lakes and that the Algoma beach must lie to the west of the locus of the find (figure 1).

In order to understand the significance of the position and elevation of the locus of the Molash Creek find, it is neces-

sary to review briefly part of the post glacial history of the Lake Michigan and Lake Huron basins. After the Lake Chippewa-Stanley low water stage when the water plane in the Lake Michigan basin was 350 feet beneath its present level the lake rose to the Nipissing stage water plane 605 feet above present sea level (Cf. Hough, 1953, pp. 84-91). Some radiocarbon dates of the Nipissing stage are 2,925 B. C. (Y-238), 1705 B. C. (C-504), and 1518 B. C. (C-364). Sometime after about 1500 B. C. the water levels dropped to the Algoma stage water plane at 596 feet above present sea level (Cf. Hough, 1953, pp. 92-94). Following the end of the Algoma stage the water levels fell to the modern plane of Lake Michigan about 580 feet above present sea level.

Throughout the Point Beach State Forest and in the area west of it until the 605 foot contour is reached there are fossil beaches manifested by deposits of beach gravels or by sandy ridges parallel to the present shore of Lake Michigan. These fossil beach lines record the fall of water levels from the Nipissing stage to modern times.

The locus of the Molash Creek find is not only below the level of the Nipissing stage but also beneath the level of the Algoma stage. The locus of the Molash Creek find is also

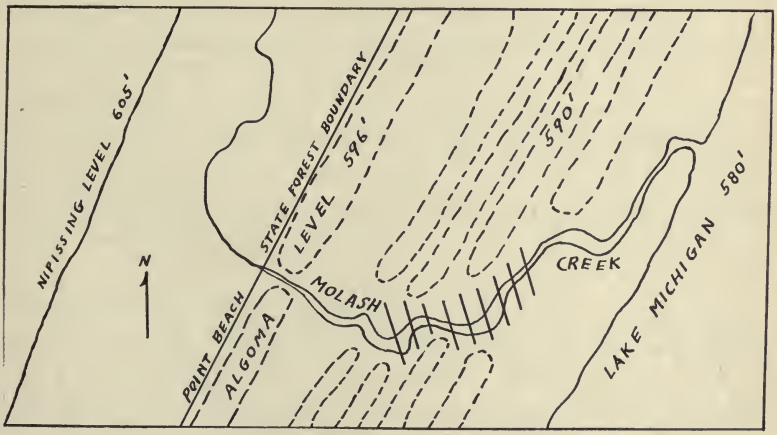


Figure 1

Sketch map of Molash Creek area in Point Beach State Forest. Locus of Molash Creek burial somewhere in hachured area. Broken **lines indicate old beaches. Scale: It is about one mile from tht State Forest Boundary to the mouth of Molash Creek.**

on the lakeward side of the 605 foot contour and the first 596 foot contour below the 605 foot level. Therefore the earliest possible date for the Molash Creek burial is at a time later than the terminal date of the Algoma stage.

There are two places in Ontario that have produced radiocarbon dates relating to the Algoma stage. At the Burley site near Port Franks, Ontario on the southeastern shore of Lake Huron charcoal from the Algoma or slightly below the Algoma level provided a radiocarbon date (C-608) of 667 B. C. (Hough, 1953, p. 93.)

In the northeastern part of the Lake Huron basin both the Nipissing and Algoma beaches have been considerably elevated by upwarping of the land. At Algoma Mills, Ontario the Nipissing beach stands at 665 feet and the Algoma Beach at 630 feet above sea level (Leverett and Taylor, 1915, p. 464).

Eastward in the present Lake Nipissing area the Nipissing stage beach has an elevation of 698 feet (Leverett and Taylor, 1915, p. 459) and the Algoma level should stand at about 650 feet or more. The Frank Bay site on the shore of present day Lake Nipissing stands at an elevation of about 640-645 feet above sea level (see Ridley, 1954, pp. 40-41). This site is late Algoma or Post-Algoma stage by virtue of its position and elevation. A radiocarbon date (M-363) from the basal portion of the site is 965 B. C. (Crane, 1956, p. 669).

The two radiocarbon dates 667 B. C. and 965 B. C. suggest a termination for the Algoma stage at about 900 B. C. or slightly earlier, but fairly high water levels continuing until perhaps 700 B. C. Since the Molash Creek burial in Wisconsin is later than the Algoma stage it must be later than about 900 B. C.

In the Upper Great Lakes region there have been a number of finds of cache and burial hordes similiar in many respects to the Molash Creek find and the Port Washington find. Some additional artifacts found in other sites but apparently part of the same general cultural assemblage are turkey tail points, birdstones, bar amulets, and unilaterally barbed harpoons of bone or copper. Parts of this assemblage have also been found associated with earlier Woodland pottery and

mounds. However, this complex as a cultural entity seems to have disappeared in the Upper Great Lakes region by Hopewell times, around 100 B. C.

In general, then, this assemblage loosely defined as it is. seems to have been present in the Upper Great Lake region between 900 B. C. and 100 B. C. In its earlier phase it is part of Late Archaic and in its later phase it is part of early Woodland.

The absence of pottery in the Port Washington and Molash Creek finds suggest that they are both late Archaic and date from 400 or 500 B. C. to around 900 B. C. Moreover. certain forms of copper artifacts, including those found at Port Washington and Molash Creek, seem to have been representative of this period, and not of the Old Copper culture.

BIBLIOGRAPHY

BROWN, CHARLES E.

1907 **The Implement Caches of the Wisconsin Indians.** The Wisconsin Archeologist, Vol. 6, No. 2, pp. 47-70.

1915 **Ceremonial Knives.** The Wisconsin Archeologist, Vol. 13, No. 4, pp. 176-181.

CRANE, H. R.

1956 **University of Michigan Radiocarbon Dates I.** Science, Vol. 124, No. 3224, pp. 664-672.

FALGE, LOUIS

1915 **Indian Remains in Manitowoc County,** The Wisconsin Archeologist, Vol. 14, No. 4, pp. 121-164.

HOUGH, JACK L.

1953 **Pleistocene Chronology of the Great Lake Region.** Final Report on Project NR-018-122, Office of Naval Research, University of Illinois, Urbana. (Mimeographed.)

LEVERETT, FRANK and TAYLOR, F. B.

1915 **The Pleistocene of Indiana and Michigan and the History of the Great Lakes.** United States Geological Survey Monograph 53. Washington.

QUIMBY, GEORGE I.

1957 **An Old Copper Site? at Port Washington.** The Wisconsin Archeologist, Vol. 38, No. 1, pp. 1-5.

RIDLEY, FRANK

1954 **The Frank Bay Site, Lake Nipissing, Ontario.** American Antiquity, Vol. 20, No. 1, pp. 40-50.

POSSIBLE EVIDENCE OF A MAT-WRAPPED BURIAL IN WISCONSIN

Robert Ritzenthaler

On August 14, 1958 an Indian burial was exposed and exhumed in gravel pit excavations on 104th St. and about two blocks north of the Watertown Plank Road in Milwaukee County. The bones were carefully removed by the shovel operator with the aid of two members of the Wauwatosa Police Department, and turned over to the Milwaukee Public Museum for identification. Reports indicated that the body was in tightly flexed position on the side, and about two feet below the surface in gravel.

An examination of the skeletal material, which was in excellent state of preservation, showed it to be the body of an Indian woman about 30 years of age with a very bad set of teeth. An interesting feature was a heavy green stain in the body of the mandible, the left mastoid, the proximal end of the humerus and on five of the cervical or neck vertebrae. The stain, due to contact with copper, localized in the jaw and neck region left no doubt that the woman was wearing a copper bead necklace when buried. The excavators stated that

Fig. 1. Close-up of remnant of bark mat.

they were looking for artifacts but found none. The fill was subsequently screened by Mr. Martin Greenwald and Mr. Kirk Whaley of the Wisconsin Archeological Society, who found five tubular rolled copper beads. The largest was ¾ inch, and the one with the greatest diameter had an outer diameter of ¼ inch. The shape and thin-sheet copper construction are characteristic of Upper Mississippi culture, although also occur in the Archaic.

The chief thing of interest to the writer was the preservation of a small portion of matting at the proximal end of the humerus due to its having been in contact with copper. The mat elements are about 3/16ths of an inch in width (warp and woof) and woven in checkerwork technique. They appear to be of bark. Historic Wisconsin Indians such as the Chippewa made similar mats and also bags from the inner bark of cedar.

It is possible that the fragment represents a portion of a mat bag although its placement at the shoulder would seem unlikely. In the writer's opinion a more likely hypothesis is that the body was doubled up and wrapped and tied in a mat before placement in the pit.

THE KRASKE VILLAGE SITE AND MOUND GROUP

Gregory Perino

Three miles north of Fayetteville, St. Clair Co., Illinois on the Kaskaskia River bluff is a village site and mound group of the Hopewell people which is located on the farm of Mr. and Mrs. Ernest Kraske who generously permitted our excavation of the mound group and a small portion of the village located on a knoll near the bluff's edge. The village site seems to have been concentrated to two or three acres. Refuse is found strewn in a semi-circular fashion around the outer edge of the knoll to an average depth of eighteen inches. Refuse pits are occasionally four feet deep. Some Mississippi pits and sherds of an early type can be found on the site.

There are differences between these people and those on the Illinois and Mississippi River, primarily in their ceramics

which tend to have a later appearance than the big rivers Hopewell.

They made use of a thin, medium sized conoidal vessel type, some with a restricted neck and straight rim and may either be smooth or cord marked, the majority being cord-marked. Rims may be undecorated or decorated with smooth stick impressions either on the top or outside of the rim's edge. Nodes in the Hopewell style are used low on the rim and mostly on the smooth vessels. Another peculiarity is oblique or horizontal cord marking on a few vessels, of a bowl like type. Fragments of standard Hopewell vessel types are found as a minority.

The refuse pits are filled with mussel shells, as also is the slope about the village. Deer bones and fish bones are occasionally found, bird bones are rare.

Full grooved axes and tapered celts occur about equally. A smaller arrow type is found than on the big rivers, although the forms are similar. The flint used for these projectile points originates primarily from southern Illinois and along the Mississippi, consisting primarily of nodular flint from the Ohio River area, Illinois novaculite from southern Illinois and the white flint from the Mississippi river bluffs. The description thus far seems to indicate a late woodland occupation. Objects and methods normally known as Hopewellian are indicated by the following data.

Half an obsidian arrow and an obsidian flake was found plowed up in the village refuse, occasional Hopewellian sherds are present and the burial customs are extremely similar as will be shown by the description of the mound group excavations.

The mounds, eleven in number, are located on each side of and behind the village proper, using in this case the river as the front. Their original height is unknown. They have been farmed for a hundred years, the larger ones still discernible, creating at present a ridge-like appearance, while others were just plowed level. I first saw them about 1938. They were then all visible except No. 11 which had been removed years before to facilitate building of a chicken house near the farm house at the extreme end of the ridge created by a large spring

that originates behind the Hopewell village and coursed southwestward into the river.

Mound No. 1 was located north and west of the village across a large ravine and on a bend of the bluff. It has been remived since I saw it last, probably to facilitate farming. Its location could not be found. In 1938 it was about three feet high and thirty feet in diameter.

Mound No. 2 appears to be three feet high and measured sixty feet in diameter. When excavated, a male burial was found on the original surface at a depth of two feet. At least a foot of the surrounding soil has eroded away. The burial is extended, the head and feet are missing, the lower legs have been disjointed at the knees and reset up six inches from the normal position. A conch shell vessel was at the right of the right tibia. The burial had been wrapped and covered with approximately six inches of top soil which in turn was covered with bark as indicated by a charred and blackened substance on the dirt covering over the body. A small log is indicated three feet to the left of the burial, by a soft white area extending for six feet. At the log's end we found a portion of a wall trench which angled under the position of the burial's missing feet and on into the mound fill. Paralleling this, four feet further south, was another wall trench beginning under the west portion of the mound and running under the eastern portion. Our excavation was eight by ten feet and the purpose of these wall trenches if they were wall trenches, could not be ascertained, as the plowing season was here and we were fortunate to dig into the mound as much as we did.

Mound No. 3 is similar to No. 2 in size, shape, and make-up, the major difference being in the number of burials found. It too had originally been quite tall and had in the last hundred years been cultivated down to a height of two feet to the original surface. Twelve inches of the surrounding field also had been eroded away. It contained parts of, and complete burials of, seven persons.

Burial No. 1 is extended 12" below the surface near the center. It is buried across and above the others. Burial No. 2 lies extended in an east west direction. It had been well

wrapped, covered with a six inch top soil mound which in turn was covered with bark. At his right thigh are three lumps of colored pigment: green, orange, and white. This burial is extended at the feet of burials Nos. 3, 4, 5, 6, and 7.

Burial No. 3 is an extended male measuring from feet to top of head six feet two inches. He had been well wrapped, a six inch mound placed over him and bark laid on this.

Burials No. 4 and 5. Burial No. 4 had been extended next to No. 3 with portions of burial No. 5, especially the long bones, placed in position near and paralleling those of No. 4. The upper portions of these burials had been disrupted by a curiosity seeker the year before our dig. Burials No. 6 and 7 had been removed and placed under his shoulders facing directly backwards. Burial No. 7 had the long bones placed along side of No. 6's and its skull set to the right of their feet. All four of these burials appeared to have been covered with the six inch topsoil mound which in turn was covered with bark.

A primary mound twelve inches high over the SE burials formed the platform for burial No. 1. Burial No. 1 was a female, all others were male.

Mound No. 4 is 20" high and forty feet in diameter. Three badly decomposed burials lay extended with heads west. Each had the six inch top soil covering.

Mound No. 5 seems to be a foot high and thirty feet in diameter. No burials could be found, but a fine bifurcate arrowhead slightly serrated was found plowed up about center of the mound. This is an unusual blade for Illinois Hopewell.

Mound No. 6 is paired with No. 5 across a ravine. It has been totally plowed to extinction.

Mound No. 7 is the same size as 5 and 6 but is nearer the river bluff south of the village. The original surface was not more than twelve inches deep. Burial No. 1, near the center, was an extended burial badly decomposed. Near its head was a medium sized woodland vessel of a cord marked design and conoidal shape. At its right foot was another vessel also cord marked, medium sized and conoidal in shape. It has a sharply constricted neck and a two inch outcurving rim. Both vessels had been damaged by the plow.

Burial No. 2 is south of center and also extended. It is shallow and so badly decomposed that only a streak of bone could be traced. At its feet were two medium sized conoidal vessels, one cord marked, and one smooth with protruding nodes low on the rim. These had been plowed into. All four vessels are grit tempered and thin.

Burial on 3 is eighteen inches deep and just under the original surface, near the top, and to the east of a subfloor pit. It is badly decomposed. A group of artifacts were found near the right elbow consisting of eleven common arrowheads as might be found on the village site. Some had the common Hopewell type notches, others were barbed, stemmed, or ovate. Fragments of a cut and ground coyote jaw and a beaver jaw also were recovered, including one sandstone abrader and a bone awl fragment. Traces of red ochre were near these objects.

Burial No. 4 is a semiflexed burial of a young person which lay in a forty two inch subfloor pit under burial No. 1. The pit was fifty-two inches wide and seventy-six inches in length. The fill was mixed clay and top soil. Just below burial No. 3 and above No. 4, sealing the lower portion of the subfloor pit, is a thin black layer of bark or similar covering.

Several years ago when the mound was larger, half of a clay earspool very similar to the Snyder's village site earspools, was found. Bone fragments could then be seen as they were plowed up, and no doubt several burials have been plowed from this mound.

Mound No. 8 is the most noticeable of the group. It contained a subfloor pit extending 18" into the subsoil and varied in width, major diameters being 6 feet x 8½ feet. A medium sized boulder marked each corner of the pit. From the present mound height to the pit's floor is a depth of forty-nine inches. A fire had been kindled at the northwest corner on the natural surface for a considerable length of time. Three large male burials lay extended head east. Burial No. 1 had no artifacts and was almost completely decomposed. Burial No. 2 had on his sternum the remains of a crushed copper covered wood cylinder two inches in length with twine for suspension built into the decoration between the wood and cop-

per. One pearl slug bead lay under the copper and was preserved by the copper salts. A platform pipe of green pipestone (Fig. 1) lay to the right of the head. Both stems were broken off and placed near the bowl. Its size is 2" wide and 4½" long and 1½" high, the bowl being 1¼" wide. Burial No. 3 was along the south wall. On his chest lay an effigy pipe of brown pipestone representing a woodcock with bill in the ground. (Fig. 2) Its wing feathers are represented by cross hatching. It is four inches long. Under the jaw was a half inch clay bead that once was copper-covered. A fragment of sandstone cone and three thin cord marked sherds, together with one small projectile point and one classic Hopewell sherd was found in the pit's fill. The bones of a burial were scattered over the tomb at natural ground level. In the mound fill above, three burials were encountered in an extended position. All had been partially plowed out.

Mound No. 9 is ridge-like in appearance except that the northern end seems slightly higher than the rest. A six foot square pit was dug in the approximate center of this high point. Mound fill extended downward for thirty-four inches. At this depth a portion of the subfloor pit could be seen. This was further exposed by following the sharp outline between the top soil fill and the clay walls. Excavation continued with removal of the fill. The pit was sixty-nine inches in depth from the surface of the mound, or thirty-five inches

Fig. 1. Platform Pipe.

in depth from the original surface. Its width and length is 78 inches by 120 inches.

Fragments of two burials could be traced, both were extended females, partly disturbed. Soil separated from the floor which was dark at the cleavage line and only slight indication of bark coverings existed about eighteen inches above the burials. No trace of burial wrappings remained. At the left ankle of the southern burial was a clay platform pipe and a badly decomposed yellow stone one that has the consistency and appearance of yellow ochre.

The pipes were about ten inches apart. Between them was a quantity of quartz pebbles as used in a large rattle. A sherd of thin Woodland ware and one of a Hopewell type, was found in the fill near the floor.

Mound No. 10 has two shallow pits, one in the northern and one in the southern portion. Both are twelve inches below the natural surface. Pit No. 1 contained nine burials; three female and six male (Fig. 3). It is seventy-eight inches wide and ninety inches long. Several burials were extended, some on their right sides. One is a bundle burial placed over burial No. 5 and one is a flexed burial laid over the feet of burials No. 3, 4, and 5.

An extremely heavy covering was found over the burials at natural ground level extending several feet past the pit's edge. The floor also was heavily covered as well as each

Fig. 2. Woodcock Effigy Pipe.

individual burial. Burial No. 2 had one flake knife with black and brown pigment about it. A gap of thirty-two inches separated the two pits. Covering of Pit No. 1 extended over to Pit No. 2 which was excavated by the Indians through the primary mound and covering.

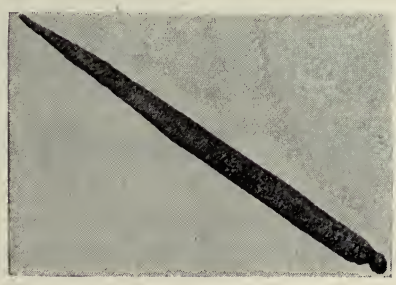
Pit No. 2 is 108" wide and 90" long. The floor is brown from decomposed covers. Two bodies partially decomposed had been interred along the north and west walls. Both skulls had red ochre on that portion that is highest from the floor. Considerable soft white material was over the northwest corner similar to that made by decomposed logs. A three to four foot burnt area covered the silt 10" from the floor over the northern end of the east wall. Charcoal and ashes were two inches thick. These were then covered over to a height of 18" from the tomb floor.

Fig. 3. Burial Pit, Mound 10

Interesting Wisconsin Specimens

DECORATED COPPER KNIFE

With socket tang and notched ornamentation on blade. Length 6¾ inches. Shawano County. Grutzmacher Collection.



COPPER PENDANT

Such needle-shaped objects grooved for suspension occur in Ohio burials as hair ornaments. This specimen was found in Fountain Prairie, Columbia County. It is 70 mms. in length. Harold Hempel Collection.

The Society's annual dinner was held June 16th at the Maryland Hotel, Milwaukee, in honor of W. C. McKERN who announced his retirement as Director of the Milwaukee Public Museum. Mac's contribution to Wisconsin and American archeology was related in talks by Mr. George Quimby, Dr. E. G. Bruder, Dr. Warren Wittry, Dr. David Baerreis. He was presented with an atlas, and a life membership to the Society. The McKerns are now living in Berkeley, California. We know their many Wisconsin friends join in wishing them well.

Archeological activity of the summer was limited to excavations at the Gullickson Rock Shelter in Jackson County where Warren Wittry explored the deposits under the petroglyphs for cultural linkage, and at Fort Atkinson where James Porter explored for the location of the old fort.

The following new members are welcomed into the Society:

La Dow Johnston, 2001 Toledo Trust Bldg., Toledo, Ohio.
Henry Hohenstein, 814 Gardner Ave., Jefferson, Wis.
Texas Technological Library, Lubbock, Texas
Addison E. Avery, 219 Cyler Ave., Oak Park, Ill.
Bernard Crowe, 1223 Third Ave., Portsmouth, Ohio.
Bruce M. Gates, 611 Cedar Point Drive, Williams Bay, Wis.
Roy Latham, R. F. D. 1, Orient, Long Island, N. Y.
Joseph Gillish, Jr., Hustisford, Wisconsin
Henry A. Kenyon, 100 Williams St., Williams Bay, Wis.

December, 1958 Vol. 39, No. 4

THE WISCONSIN ARCHEOLOGIST

KANSAS CITY, MO.
PUBLIC LIBRARY
FEB 23 1959

A PRELIMINARY REPORT OF THE HAHN AND HORICON SITES, DODGE COUNTY, WISCONSIN

WISCONSIN ARCHEOLOGICAL SOCIETY

Milwaukee, Wisconsin
Incorporated, 1903

For the purpose of advancing the study and preservation of Wisconsin Indian Antiquities.

Meets every third Monday of the month at the Finney Neighborhood Library, Sherman and North Avenue, Milwaukee. (Except during July and August.)

OFFICERS

PRESIDENT

Arthur Niehoff

VICE-PRESIDENTS

H. W. Cornell — Ellis Burcaw — Herman O. Zander
Laurence Kracht — Dr. D. A. Baerreis

DIRECTORS

Dr. E. G. Bruder — Kermit Freckman

ADVISORY COUNCIL

Frank Achen
H. S. Breitwish
Dr. E. G. Bruder
William Curkeet, Jr.
Edward Eichenberger
Kermit Freckmann
William Godfrey
Robert L. Hall
Robert Howard
Zida C. Ivey
Mrs. Theo. Koerner
W. C. McKern
Robert Menten
William Oestreich
Neil Ostberg
Louis Pierron
Allen Prill
Arthur W. Quan
J. Ringeisen, Jr.
Chandler W. Rowe
Chas. G. Schoewe
Paul Scholz
Lincoln Smith
Kirk Whaley
Dr. A. C. Whiteford
Warren Wittry

TREASURER

Martin Greenwald

SECRETARY

Phil H. Wiegand

EDITOR

Robert Ritzenthaler

MEMBERSHIP FEES

The Wisconsin Archeologist is distributed to members as part of their dues.

Life Members, $50.00 — **Endowment Members, $500.00**
Sustaining Members, $5.00 — **Annual Members, $2.00**
Institutional Members, $2.00

All communications in regard to the Wisconsin Archeological Society and contributions to the Wisconsin Archeologist should be addressed to Phil H. Wiegand, 1276 N. 63rd Ct., Wauwatosa 13, Wis. Entered as Second Class Matter at the Post Office at Lake Mills, Wisconsin under the Act of August 21, 1912. Office of Publication: 204 N. Main St., Lake Mills, Wis.

TABLE OF CONTENTS

A PRELIMINARY REPORT OF THE HAHN AND HORICON SITES, DODGE COUNTY, WISCONSIN, Richard O. Keslin

Introduction	191
Acknowledgements	196
The Hahn Sites (Dg 1 and Dg 2)	196
Introduction	196
Excavations at the Hahn Site I (Dg 1)	200
Cultural Material (Dg 1)	203
Excavations at the Hahn Site II (Dg 2)	209
Cultural Material (Dg 2)	215
Summary (Dg 2)	231
The Horicon Site (Dg 5)	244
Introduction	244
Excavations	246
Cultural Material	248
Summary	256
Conclusions	258
INTERESTING WISCONSIN SPECIMENS	274
COLLECTOR'S CORNER	275

THE WISCONSIN ARCHEOLOGIST

Published Quarterly by The Wisconsin Archeological Society

New Series

MILWAUKEE, WISCONSIN, DECEMBER, 1958

A PRELIMINARY REPORT OF THE HAHN (Dg 1 and Dg 2) AND HORICON (Dg 5) SITES, DODGE COUNTY, WISCONSIN *

* Based on M. A. Thesis, University of Wisconsin, Madison

Richard O. Keslin

INTRODUCTION

Knowledge of the prehistoric cultures of the state has been constantly accumulating over the years due to the untiring efforts of a great many individuals. Students currently involved with archaeological problems are deeply indebted to men like Lapham, Barrett and McKern, to mention only a few, who were responsible for the establishment of the basic groundwork to which we can only add a few details in attempting to clarify or elaborate the prehistoric cultures and sequences they established. It is to the credit of these men that most of the archaeological work in the Wisconsin area has been oriented toward the establishment of the broad cultural sequence we now have. That there is, as a rule, little difficulty in placing a specific site within this framework is partially due to the comprehensive trait lists which have been prepared for the major Wisconsin cultures.

While these trait lists have been a major contribution to an understanding of the state's prehistory, there are still a number of questions which they fail to answer. For example, we still lack information on the development and evolution of culture types, their temporal associations and accurate dating for them. Even though the Mississippi culture has been dichotomized into Middle and Upper (McKern, 1945) of which fairly accurate dates are available, the same is not true of the Woodland culture. Although several divisions of the Mississippi culture have been used by various archaeologists, the terms Middle and Upper Mississippi will be used in this

paper since they are the more common terms in the Wisconsin area. Middle Mississippi, as it is used here, is directly comparable to the Early Mississippi of Bennett (1952, p. 119), and to the Old Village Focus of Griffin (1946, p. 49). The trait lists, as they now stand, have the sole purpose of identifying a given site as a manifestation of one of the cultures since the lists include almost all artifacts of all known sites of a given culture, thus obscuring any temporal differences that may exist.

In the past trait lists have dealt with culture as something static, which it obviously is not — the construction of trait lists simply has not allowed the dynamics of culture to be indicated. To state that cultures do change is of course a truism, yet it is a fact which has been overlooked all too aften in the past and one which is still occasionally ignored. While the rate of culture change is dependent on a number of factors, not the least of which is the culture contact situation, there can be no serious disagreement to the statement that when different cultures are subject to propinquity, a certain amount of borrowing is inevitable.

The weakness of the all-inclusive trait list as a tool for the understanding of culture change becomes apparent if one attempts to visualize trait lists of the cultures of Egypt, Mesopotamia, Rome and Hellas constructed without reference to time but containing all items of material culture. One could certainly identify some objects as being of the proper culture, but this is the absolute limitation of such a list. Questions of origin, diffusion, and development of these cultures could never be adequately explained. The situation in the Americas is directly comparable to the hypothetical problem just cited but is further complicated by the absence of corroborating written records. Lacking these, the solution to the understanding of culture history depends entirely on archaeological evidence. Yet all the archaeological data in the world cannot be meaningful unless the key factor, the establishment of the temporal relationship of discrete culture units, is realized.

What is needed is some method of breaking down the broad cultural units included in the usual trait list into more discrete segments so that criteria can be established to deal

with cultural aspects in terms of temporal depth; so that innovations, changes, and borrowings can be plotted against time. At this point there are two traditional approaches to the problem; one can either work with culture complexes or classify materials using the Midwestern Taxonomic System. While the latter does have advantages for certain manipulations, the ignoring of the time factor by the system precludes its usage here.

The culture complex method, dependent as it is on data from several sites, has its disadvantages, but none the less appears to be the most logical approach. Traits which keep reoccurring at different sites should be considered representative of one culture complex. However, the difficulty lies in setting the limits of a particular complex, for the culture complex, like a projectile point or pottery "type," very often grades into another "type," thus necessitating some arbitrary line of delimitation. One of the problems is to define the limits of variability within the cultural group which is, of course, no easy task, not only because of the variation within each group, but also because of differences caused by modification of the cultural standards through time and/or distance.

The solution might lie in the establishment of a basic pattern of associated material traits which would be relatively consistent at a number of sites. The problem of attempting to include all the material is impractical simply because of the normal diversity occurring at different sites, caused in part, by individual variation but also because of the limited sample uncovered by the archaeologist. This "solution" includes specific problems of its own, the main one being the determination of elements to be included in the basic pattern. There cannot be a simple answer to this problem and considerable variability would exist in different sections of the country, but if at least three sites of a basically similar nature and located in the same general area were used as a starting point, one might well be justified in assuming that elements common to all three should form the basic pattern sought. This should hold even though a slight difference in time might exist between these sites.

Once these basic cultural elements are determined, the dif-

ferences which occur between these sites should provide insight to their arrangement in a relative chronological sequence. As other sites of the same general type are uncovered, they should fall into their proper chronological position more easily.

One point that should be apparent is that that the number of elements contained in the basic pattern is dependent on two factors; the special and temporal propinquity of the sites selected and the number of sites included. The more distant sites are from each other, the less contact is likely to have taken place between them (assuming contemporaneity) and in addition, contact with other groups can be expected to have had a greater influence on the cultural assemblage. Both factors would tend to decrease the number of common elements.

Up to this point the term site has been used without qualification, but specific type sites are implicit in the discussion, and these are the camp and village sites. It is here that one should find the most complete inventory of material culture; the abortive projectile points, pottery cracked in the original firing, food detritus, in short, the odds and ends of everyday living that are not characteristically found in mounds or burial areas. For all that the latter yield, such as spectacular artifacts and information on burial practices and rituals, it is from the camp and village that information on the way of life of the peoples concerned is obtained. Moreover, it is highly probable that some mound groups were in use and augmented by new mounds for decades and perhaps centuries (Baerreis, 1946). Thus any attempt to define a culture complex on the basis of a mound group or groups is more likely to obscure the facts than clarify them. There is also the distinct possibility that burial customs may tend to be more conservative than other cultural aspects and if this is the case, a burial area should be the last place to investigate culture change.

That conservatism in burial practice exists and has existed in the past, can be briefly illustrated by two examples. In our own culture, the practice of using an artillery caisson drawn by gray horses for the funeral cortege of an important

political or military figure, dates back to the time when horse-drawn vehicles were the only means of transportation. Yet the same funeral cortege is used today with horses being maintained by the army specifically for that purpose. This conservative aspect extends quite far back in time, for excavations in Mesopotamia have produced evidence that at a time when wheeled vehicles were in common use, the sledge, which preceeded the chariot, was used only for the conveyance of the deceased to his final resting place.

After the site has been excavated it is imperative that the material be presented in a form that facilitates comparison with data from similar sites. The material should be described and analyzed so that types may be established for these purposes, especially of pottery and projectile points since these are most diagnostic of cultural affiliation and the most sensitive indicators of change. When the types are established, the cultural unit as a whole can be compared with other units of the same general type. Thus the contemporaneity of sites should be fairly easily determined and spacial delimitation may be facilitated.

In this paper an attempt will be made to establish such a culture-complex based on data from three sites of the Woodland Pattern: Hahn II (Dg 2), Horicon (Dg 5), and Blackhawk (Da 2). In addition, it is planned to tentatively place this complex in its proper chronological position. Since neither the Horicon site nor the Hahn sites have been reported upon, a preliminary report on these sites will be included. The Blackhawk site has already been described (Baerreis, 1953, pp. 5-29) so it will be used only for comparative purposes. The report will also include a fair amount of what is usually considered "raw data," because even though type descriptions are invariably given in every archaeological report, these are often inadequate for use by other individuals, one reason being that the artifacts "typed" are described in qualitative rather than quantitative terms, and so all the reader can obtain from the report is a picture of the ideal "type." Because this is an era of rapid change, and new techniques are constantly being added to the archaeologist's repertoire, it is felt that a detailed report will allow reinterpretation and reevalu-

ation as new information and perhaps new and better techniques are added.

ACKNOWLEDGEMENTS

For their assistance and cooperation in the excavations and in the preparation of this paper, the author is indebted to a great many people. Foremost among these is Mr. Edward Hahn, who not only generously allowed the excavation of sites on his property but who was of invaluable assistance in a number of ways. His helpfulness ranged from such things as the removal of several feet of overburden with his bulldozer to the loan of his collection of celts, axes and projectile points for analysis.

To Professor W. W. Howells who gave suggestions and assistance in the analysis of skeletal material; Professor S. Judson, then of the University of Wisconsin Geology Department, for the time and effort he spent both at the site and in the laboratory identifying the material from which the artifacts were made; Dr. W. C. McKern, Dr. Robert E. Ritzenthaler and Mr. Elmer Goessl of the Milwaukee Public Museum for their generous assistance in the identification of cultural material; all the students who devoted some of their weekends to work at the sites; and especially Professor David A. Baerreis for his direction, suggestions, helpful criticisms, and constant encouragement throughout the period of excavation and research, grateful acknowledgement is made.

The writer is also much indebted to the Wisconsin Archeological Survey for the financial assistance provided.

THE HAHN SITES

Introduction

Early in the spring of 1950 the Edward Hahn farm was brought to the attention of the Department of Sociology and Anthropology of the University of Wisconsin by Dr. T. R. Sharp of Reeseville. He brought to the office of Professor W. W. Howells several bone fragments (the head of a femur, the spinal section of a vertebra and several unidentifiable splinters) that, due to their large size could only have come from a fossil elephant. Although the single criterion of

size was adequate to determine the genus, the absence of teeth made it impossible to determine whether it was a mastadon or mammoth. This skeletal material was reported as having been found on the farm of Mr. Edward Hahn near Mud Lake in Dodge County and had been discovered in the course of gravel pit operations.

Normally elephant bones would come within the scope of the Vertebrate Paleontologist, but the fact that numerous fluted projectile points have been found in the Mud Lake region (many of which are in the collections of the State Historical Society) enhanced the importance of the find because of the possibility of association with a Paleo-Indian occupation in this area.

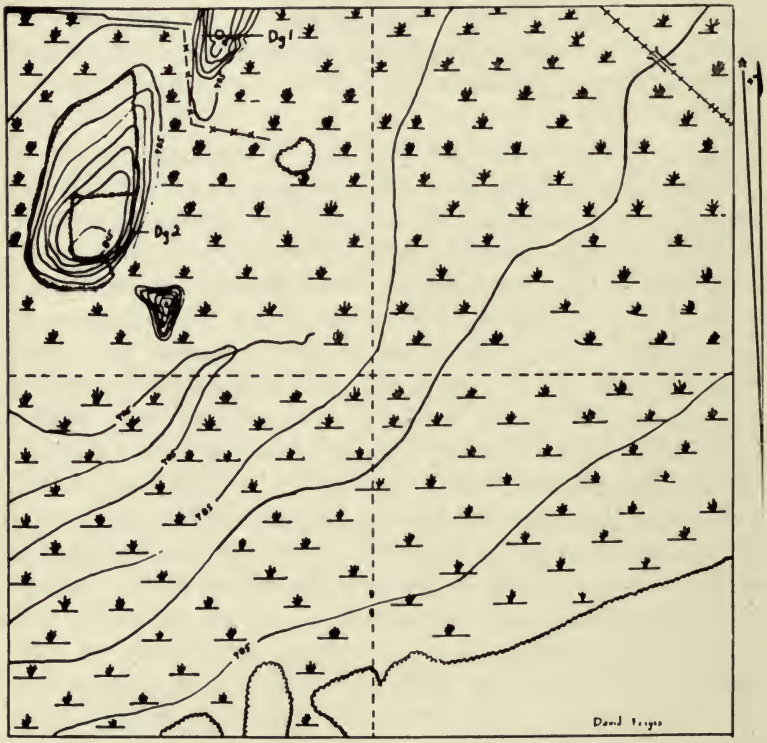
The site was visited by members of the Departments of Geology and Anthropology who had planned to make a thorough survey of the site. This however was impossible because of the heavy spring rains which made an island of the knoll containing the elephant bones. Some preliminary tests were made after a rowboat had been secured and the party rowed to the "island." The pit from which the elephant bones had been removed was carefully examined and it was noted that additional bones were located at the western edge of the pit. These were adjudged by Professor Sheldon Judson of the Geology Department as being undisturbed and **in situ** since the sustaining gravels and sands in which they were incorporated showed no movement. The bones were removed and arrangements were made with Mr. Hahn to allow groups of students to excavate the area.

Actual excavation was not started until the spring of 1951 when the first group of students, together with members of the faculty, made a field trip to the Hahn farm to investigate the elephant bones and archaeological material at the site. The subsequent excavations were carried out during spring and fall of the school year by student personnel under the supervision of David A. Baerreis, Professor of Anthropology at the University of Wisconsin.

During one of these field trips Mr. Hahn, while transplanting fruit trees in another section of his farm (about three-eighths of a mile southwest of the excavation area), noticed a

considerable number of bone fragments in this area. Subsequent testing by Mr. Hahn and Dr. Baerreis unearthed flint and quartzite flakes, some pottery fragments and a considerable quantity of bone refuse. These were distributed over a fairly extensive area indicating that this was the site of an aboriginal camp or village worthy of further investigation.

Shortly after this discovery, the excavating parties were split into two groups: one working at the site of the Elephas



(Figure 1.)

skeletal material (hereafter designated Dg 1), while the other group worked at the campsite (Dg 2).

In 1952 the work continued with Professor Baerreis directing the work at Dg 1, while the writer was supervising the excavations at Dg 2. The labor force was again composed of students from the Universnty of Wisconsin who devoted some of their weekends to work at the sites. The excavating continued in this fashion until the summer of 1953 when Robert Maher and the writer, financed by the Wisconsin Archaeological Survey, spent a week at the site working out some of the problem areas and preparing maps of the terrain.

The Hahn sites are located about 35 miles northeast of Madison in the southeastern part of Dodge County, Wisconsin, near Mud Lake. Specifically, they are located in Section 10, Township 9 North, Range 14 East (Figure 1). This is a glacial drift region and the countryside abounds in moderately low, rolling hills, particularly to the areas north and west of the sites. Immediately adjacent to the sites is a low marsh which after the spring rains becomes an extensive, although shallow, lake. The marsh terminates a few hundred yards to the west at the bank of the Crawfish River (the West Branch of the Rock River), but extends for several miles to the east of the sites. There is little doubt that sometime in the past this marsh had been a true lake. However, whether it was a marsh or a lake at the time these sites were occupied is unknown.

The separate knolls occupied by the sites are, for the most part, now denuded of trees; only grass and weeds with an occasional low bush remain of what had at one time been a hardwood forest. Other knolls, which have remained in their natural vegetative state because of the difficulties involved both in clearing them and cultivation after they had been cleared, bear oak and hickory in fairly open groves. The openness of the area is probably due to cattle grazing and during aboriginal times may have been filled with forest undergrowth. This would have provided ample shelter and food for an animal population several times larger than that present in the area today, a factor partially verified by the quantities of excavated bone refuse. Although not all the bones have

yet been identified, deer seems to have been a major item in the diet of the inhabitants of the sites, for these bones form the largest single group. However, the bone refuse also indicates that neither the smaller mammals nor water resources were overlooked. Fish bones and mussel shells are fairly rare but turtle bones and carapaces are moderately abundant.

There is every reason to believe that the animals in the area today were also present in aboriginal times and were certainly more abundant at that time. One factor not to be ignored is the probability that the inhabitants practiced agriculture. It is likely that agriculture was not the most important economic aspect and perhaps it was not even one of the more important, but since this group appears to be rather late in time and has been associated with food production elsewhere, its occurrence here is most probable.

All things considered, the area would have been most attractive as a camp or village site. Since no evidence of permanent dwellings was encountered, the term camp site will be used throughout this paper, although the possibility exists that the occupation here was permanent enough to warrant the term village.

The knoll on which Dg 1 is located extends into the marsh, forming a peninsular extension of the slightly elevated area north of the site (Figure 1). Dg 2 is on another knoll about three-eighths of a mile southwest of Dg 1 (Figure 1). These two knolls become a true peninsula and island, respectively, after the spring flood and can be reached conveniently only by boat.

Excavations at the Hahn Site I (Dg 1)

The original purpose in excavating this site was the hope of finding associated Paleo-Indian cultural remains with the Elephas skeletal material located in this area. To date these efforts have been unsuccessful. However, while no remains have been found associated with that Pleistocene animal, there are scattered evidences of Indian occupation in the form of flint and quartzite flakes and a very few pottery sherds. More than this, the knoll had been used as a burial area by some aboriginal group and several burials were uncovered by Mr. Hahn. Unfortunately, several of these were excavated with

a bulldozer, a tool hardly suited for the purpose. Although Mr. Hahn has been most careful to avoid removing sand and gravel from areas where burials were known to be located, the burials occur at random in many sections of the knoll, and in sand pit operations the bones are often not discovered until the loading of the sand and gravel begins.

The one burial excavated was found because of the careful observation of Mr. Hahn, who, as he was scraping the gravel noticed the dark outline of a pit and immediately stopped working in this area and notified us of it at the time of the next field trip. The burial was about twenty feet south of the elephant excavation area.

This burial had three levels of interment and contained four individuals; Level I, (the uppermost) a flexed primary; Level II, two secondary bundles; Level III, a semi-flexed primary. Level I contained the flexed skelton of an infant (whose approximate age was three years) about two to three feet below the surface. The stated depth is only an approximation since the scraping operation eliminated all reference points of the original surface. The upper body was oriented in a general north-south direction with the head to the north. It rested on its right side with the face to the west. The bones of the infant were poorly preserved; the cranium was crushed and distorted and most of the ribs were broken. However, the vertebrae, which had not been completely ossified at the time of death, were in excellent condition. In addition to those of the infant, some adult bones belonging to an individual in level II were also present.

Level II was separated from the first level by a very thin layer of earth which accounts for the presence of some of these bones in level I. The remains of two individuals, an adult male and a child of approximately four or five years, were contained in this level. The bones of both individuals were entirely disarticulated and intermixed. The state of preservation of the child's bones was about that of the first child. However, the bones of the adult were fairly well preserved; the calvarium (skull vault) was in excellent condition, although the facial bones were broken as were some of the long bones. Some of this bone damage may be ascribed to the method of

filling the graves, for in addition to the dirt and gravel, large rocks, up to one foot in diameter, were included which, while it may have made for more expedient filling of the grave, certainly did nothing for the preservation of the skeletal material.

After the skeletal material of Level II had been removed and the bottom of the pit carefully troweled, it was noticed that the black humus of the pit was still present and after excavating another 14 inches of soil, the cranium of the individual interred in Level III was encountered. When the burial was finally uncovered, it was found that the orientation of the upper body was west-northwest by east-southeast with the head at the northern extremity. The individual had been placed on his back, the legs were slightly flexed to the right with the lower legs bent back on the femurs, the heels toward the hips. The left humerus was parallel to the body with the lower arm flexed back so that the left hand was over the center of the thorax. The right arm was extended parallel to the body with the hand in the general region of the pelvis.

The preservation of the bones was excellent, even the ribs with one or two exceptions were in very good condition. Other exceptions were the distal end of the right humerus and the proximal ends of the adjoining radius and ulna — casualties of the method of filling graves, for they were lying below a large, heavy rock and as this level was about four or five feet below the original surface, the bones were most probably broken when this stone was dropped in.

All of the bones were in articulated position although the skull had been somewhat displaced from its normal position and when uncovered, it and the first two cervical vertebrae were at a right angle to the vertebral column. The grave apparently had been dug a little too small and as the grave was filled, the pressure of the soil may have displaced the skull and the two vertebrae from the rest of the vertebral column which placed the foramen magnum in direct contact with the soil after the flesh had decayed. This undoubtedly had a great deal to do with the excellent preservation of the cranium, since it would allow the soil to enter and thus tend to equalize the pressure of the soil on top of the skull to keep

it from being crushed or split. Other factors which may have contributed considerably to the preservation of the skeletal material are the porous gravel bed and the depth of the interment which is well below the frost line.

Cultural Remains at Dg 1

There were no grave goods in direct association with the burials at Dg 1. However, the fill did contain some cultural material consisting primarily of bone refuse, flint and quartzite flakes, a few pottery fragments, and one projectile point fragment. It is triangular in outline and oval in cross section. The basal section is missing, but from the form it had very likely been a notched variety.

Cultural detritus was scattered all over the knoll, but nowhere was it abundant. The pottery found in this section of the Hahn farm is quite distinct from that of Dg 2, the second area of excavation on the farm. The surface finish on the sherds is either cord roughened only or bears an incised decoration over the cord roughened surface. Since the incised decoration is usually limited to the rim and neck of the vessel, it is assumed that the cord roughened sherds found in this area came from the body sections of the same vessels. This type of pottery has been found throughout most sections of Wisconsin and portions of adjacent states and was formerly included in the broad category of Effigy Mound, which is a sub-type of Lake Michigan Ware (McKern, 1930: 456-457). More recently this pottery has been established as a named type, Dane Incised, (Baerreis, 1952, pottery type descriptions presented at a conference of the Wisconsin Archaeological Survey). Since the type description has not yet been published, it is included here.

Dane Incised

PASTE:

Method of Manufacture: Probably modeled from a single piece of clay with the subsequent application of the paddle and anvil technique.

Temper: Coarse, crushed grit is the material commonly used. Some of the particles are as large as 8 millimeters, but the average is 3 to 4 mm.

Texture: Coarse, porous and granular.

Hardness: 1 to 2.5.

Color: Surface colors range from reddish-orange to dark brown. At Dg 1 the reddish sherds are the most prevalent. The interior of some of the sherds is light tan in color and contrasts sharply to the reddish exterior. The color of the sherd wall varies considerably from sherd to sherd. Most, however, are red to within .5 to 1 mm. of the interior and many have dark gray to black cores.

SURFACE FINISH: Both the interior and exterior surfaces are normally rough due to outcroppings of temper particles. The entire exterior surface of the vessel is covered with cord-wrapped paddle impressions. These are usually vertical on the rim and shoulder area, but were applied in random fashion on other areas. None of the sherds exhibit subsequent smoothing.

DECORATION: The decoration, which is confined to the rim and neck of the vessel, consists of carelessly executed, incised lines forming angular patterns. On some sherds circular punctates which begin 35 to 40 mm. below the lip, are present and form slight bosses on the interior. The most common design consists of a series of parallel, horizontal lines which start anywhere between 4 to 8 mm. below the lip. Combinations of horizontal and oblique lines also occur. Three of the five rim sherds found at Dg 1 also have short cord-wrapped stick impressions on the lip.

Rim: Straight or slightly flaring.

Lip: Gently rounded and smooth, except for the previously mentioned cord-wrapped stick impressions.

Body: The typical body is a globular jar. (However, no restorable vessels were found at Dg. 1).

Base: Conoidal.

Thickness: The average wall thickness of complete rim sherds (lip included) is 13 millimeters. Other decorated sherds range from 9 to 13 mm., with an average of 10.7 mm., while the cord roughened body sherds vary from 7 to 13 mm. with an average of 9.3 (based on 34 sherds).

GEOGRAPHICAL RANGE: Central, southern and eastern Wisconsin.

CHRONOLOGICAL POSITION: Where this type of pottery occurs in a stratigraphic context it is found to be the earliest. It probably begins in the Early Woodland but may well continue into the early Middle Woodland period.

Conclusions Dg 1

On the basis of materials found at Dg 1, there is no evidence that the area was occupied by any Paleo-Indian group, but there is the possibility that such evidence may be unearthed at some future time. The cultural debris is of a type usually assigned to the Early Woodland Period and indicates that this site was probably used as a temporary camp by at least one of the groups extant at this time. Because of the sparseness of cultural materials, it is assumed that the occupation of this area by Early Woodland peoples was of extremely short duration.

The burials themselves offer little in the way of additional information, for even though two adult skeletons were available for analysis, the methods of physical anthropology require a much larger sample to provide reliable information on the specific group or groups involved. About all that can be said is that both individuals were dolichocephalic and can be included in the rather broad classification of Sylvids (Von Eichstedt classification, 1934).

Cultural affiliation of the interred individuals is difficult to determine because of the absence of grave goods. The inclusion of Early Woodland pottery in the grave fill is not significant since it only indicates that the burials are not those of a pre-pottery people. The burial pits could have been dug by the Early Woodland people or any later group in the area.

Excavations at the Hahn Site II (Dg 2)

The site Dg 2 lies about three-eighths of a mile south of Dg 1 on the eastern downslope of a knoll which rises out of the marsh (Figure 1). The dimensions of the site are approximately 100 feet in the east-west direction and 200 feet in the north-south axis. This 20,000 square-foot area contains the greatest concentration of cultural material; although some flint chips and pottery fragments are found beyond this rectangle, the quantity is negligible. On the east, the site is

bordered by the marsh and on the west by the relatively flat, level top of the knoll which is now a cultivated field. This field, which has been in cultivation for a number of years, has yielded flint and quartzite flakes as well as an occasional artifact, and may represent another area of the site or possibly a separate site. The material found on the plowed field is nowhere abundant and to date, the quantity accumulated is insufficient to determine the relationship. It is suspected that the knoll area is merely an outlying portion of the site, but there are other alternatives; one of which is that the level area at tne top of the knoll represents the actual habitation site, while the sections excavated were part of a midden. One factor tending to strengthen this hypothesis is the absence of hearths, or rather, the failure to encounter hearths during the course of the excavation. It is quite possible that the failure to find evidence of fire pits was due to the sampling technique rather than their actual absence, since only a small portion of the site has been excavated. However, until the field is allowed to lie fallow, there is little likelihood of conducting tests to resolve this problem.

No features of any kind were found at the site, but one aspect of the terrain should be included here because of its affect on the excavation methods. Numerous rocks and boulders just under the surface, which varied in size from a man's fist to five feet in diameter, seriously complicated the excavation, particularly the large boulders which of necessity were allowed to remain in position and thus generally limited excavation to only three or four of the 4-inch vertical levels.

Excavation Methods

The grid system, using five foot squares and four inch levels, was employed at this site to ensure accurate records as to the provenience of the cultural materials found. Subsquares were not used to pinpoint the exact location of artifacts found **in situ** within the five foot square. These were simply included with other material from that square and level.

The grid was laid out with the east-west base line parallel to the slope and marked by a line of stakes at five foot intervals. The east-west line was designated O. The north-south

base-line was then established quite far down the slope almost to the marsh, and in fact beyond the actual limits of the site. A series of lines parallel to the north-south base line were then staked out at five foot intervals. It should be pointed out here that the grid system is not oriented to correspond to the cardinal directions, but rather with the topographic features of the site, so the north-south base line is actually northeast-southwest and the east-west base line is, of course, northwest-southeast. A ground plan was drawn after the site was staked so that any square could easily be located and designated by its proper number. In all, nineteen of the five foot square excavation units were dug.

Vertical measurements were made from the surface and since there is no reason to believe the contour of the surface has changed appreciably since the site was occupied aboriginally, the contour, rather than an arbitrary base datum was followed in all cases. Therefore all levels are of equal depth from the surface with the exception of those excavation units where the presence of large boulders prevented the complete excavation of a level.

The large number of these rocks and boulders prohibited the use of any excavation technique other than troweling. As a check on the efficiency of this method, two squares were excavated by shoveling and screening the soil. This took approximately twice the time and effort because trowels had to be used around the large rocks anyway. In addition, back dirt from some of the squares was also screened to determine the number of artifacts lost by not using screens as a standard procedure and it was found that less than five percent were missed and this cultural material consisted of very small sherds and small flint and quartzite flakes.

The site was fairly typical of camp sites in this area in that cultural material was not too abundant. Thirty projectile points or point fragments, five scrapers, two blade fragments, one knife (?), two smoothing stones, four drills, two antler tips, great quantities of bone refuse, flint and quartzite flakes, 644 pottery sherds and one restorable vessel were found. In addition, some items of the early historic period were also found at the site: fragments of a clay (kaolin) pipe, frag-

PLATE 1

EXPLANATION OF PLATE 1

Projectile Points Excavated at Dg 2

Number	Length	Width	Thickness
1.	(33)	25	6
2.	28	25	6
3.	(36)	20	7
4.	(23)	29	8
5.	31	25	5
6.	29	19	7
7.	25	16	3
8.	22	15	4
9.	(35)	22	8
10.	32	20	10
11.	37	22	8
12.	27	22	7
13.	—	—	—
14.	32	21	7
15.	48	22	10
16.	37	21	7
17.	(33)	17	8
18.	(22)	20	5
19.	(23)	23	6
20.	33	23	5
21.	(14)	24	6

Numbers in parenthesis indicate point is broken.

ments of a glass bottle, several nails (square-shafted variety), and what appears to be a brass flagpole tip. All in all, the assemblage is far from spectacular and the latter materials are indicative of a certain amount of disturance.

Excavated Materials

CHIPPED STONE ARTIFACTS:

The most numerous chipped stone artifacts encountered at Dg 2, excluding unmodified flakes, were projectile points (Plate 1). A total of 31 points or point fragments was excavated. Of these, 10 are fragments of the point tips and as such are of little diagnostic value. As a matter of convenience and for descriptive purposes, the points have been subdivided into three groups on the basis of form. While one of the groups is a named type, the other two lack this distinction and actually represent a "lumping" of typologically dissimilar points.

The named type has been designated **Monona Stemmed** (Baerreis, 1953, pp. 10-11) and is numerically the most significant (Plate 1, Numbers 1, 9-11, 15-20). All points in this group exhibit the same basic form, which is roughly triangular. The edges of the blade vary from moderately to slightly excurvate. The stem is formed by notches which are characteristically shallow although a few examples of moderately deep notches are present. The base is typically straight although here too some variation exists; one variant has a convex base and two have slightly concave bases. In cross-section the points vary from slight to extreme biconvexity and range in thickness from 5 to 10 mm. The range in length is from 48 to 32 mm., and in width from 20 to 24 mm.

The second category of points includes small triangular points ranging in length from 29 to 23 mm., and in width from 16 to 22 mm. They are symmetrical, nicely finished and generally flat or only slightly biconvex in cross-section. Two specimens are particularly well made; one from a mottled cream-colored chert and the other from a mottled light gray chert (Plate 1, Numbers 7 and 8). Both had been manufactured from a flat flake which had been excellently retouched on both sides and the base, so that in cross-section

the flatness gently starts tapering about 2 millimeters from the edge on all sides. The side and base are straight and small serrations are present on the edges. A third point is included in this general category (Plate 1, Number 6), but it is neither as symmetrical nor as well made as the aforementioned points. However, this may have been due to the nature of the stone from which it was made rather than carelessness or lack of skill on the part of the flintknapper. It had been made from a mottled gray and white chert with numerous impurities which would have made control of the flaking difficult. In cross-section it is almost diamond-shaped and the sides, instead of being straight, are moderately excurvate while the base alone is straight. A fourth variant of this simple triangular form is somewhat different from those already described (Plate 1, Number 14). It had been manufactured from a rather inferior piece of quartzite and the retouching is less obvious than that applied to the other triangular points. The method of manufacture was the same as that used on the other points although in cross-section it is biconvex rather than flat. In fact, one side is extremely convex due to the presence of a hump which apparently could not easily have been removed without damaging the point. The sides of this point are relatively straight but the base is convex.

A fifth point is so fragmentary that comments on it here are somewhat speculative (Plate 1, Number 13). As can be seen from the illustration, only part of the basal section was found. It apparently had been a small, side-notched variant with a flat base. The very delicate retouching and the care with which the notch had been made are typical of the majority of notched points found at the site. Moreover, the small notch occurring as it does so near the base (the stem of the next smallest point is twice as long) marks it as an entirely different type from those of common occurrence at the site. The overall impression is that if the complete point had been recovered it would fall well within the range of the notched triangular points characteristic of Aztalan and other Middle Mississippi sites.

Included in the third category are a number of points which are too few and too varied in form to warrant any categor-

ization than "other" (Plate 1, Numbers 2-5, 12, and 21). Since there are only six points in this category it is most convenient to describe at least three of them individually.

The specimen represented in Plate 1, No. 2, was made of tan and gray banded chert, is triangular in form and rather crudely side-notched (one notch is hardly more than a slight indentation). The edges of the blade are straight and the base is markedly concave. Flaking is well done but the point exhibits a certain degree of crudeness, which may be due in part to the poor quality chert. In cross-section the point is rather difficult to describe because of its lack of symmetry in this plane; one surface is definitely convex while the reverse is essentially flat except for an area about 4 mm. in width adjacent to one of the edges where it starts to curve toward the edge.

Another variant of this category (Plate 1, Number 3) was manufactured of a tan and cream-colored chert in a very symmetrical fashion. The flaking technique is also excellent. Edges of the blade are very slightly excurvate and the neatly executed notches are moderately deep. The base is slightly concave and in cross-section the point is biconvex.

The third specimen (Plate 1, Number 4) in its form is reminiscent, in a general way, of the carefully executed "typical" Hopewellian point. However, the flaking does not approach that of the Hopewellian artisans and it may well be that symmetry of form alone provides this illusion. At any rate, this fragment is of a grayish-tan chert not duplicated by any other points from the site. The chipping tends to be somewhat better than that of the points already mentioned. The deep notches start just above the base to form the expanding stem. In cross-section the point is moderately biconvex.

The last three points of this unclassified category can be described as a group because of their typological similarity (Plate 1, Numbers 5, 12, and 21). All are stemmed, triangular points with only minor individual variations. These variants are of light or medium gray chert, are symmetrical and neatly flaked. The expanding stem was formed by notches inserted either from the corner, or a short distance above the angle where the blade edge intersects with the base. In cross-section

PLATE 2

EXPLANATION OF PLATE 2

Lithic material and pottery from Dg 2.

No. 1 to 4 are Madison Plain rim sherds.

No. 5—chert blade, length 73 mm., width 38 mm., thickness 13 mm.

Nos. 6 and 7—drill fragments.

No. 8—snub-nosed scraper, length 37 mm., width 30 mm., and thickness 9 mm.

there is considerable variability: No. 5 is essentially flat and tapers on each side to form the edge, No. 12 is quite convex, and No. 21 is slightly biconvex.

Next to projectile points, the most numerous implements of chipped stone were scrapers found in two types — side and stemmed. The term side scraper is here applied to irregular primary flakes which had been retouched by pressure flaking on one or more edges to form a scraping surface. Five of this type, all made of chert, were found. Only one stemmed scraper was excavated and this differs considerably from those usually designated by the term. The typical stemmed scraper has its anterior portion rounded and retouched, but the unusual form discovered in the course of excavation had the stem retouched to form the scraping edge, (Plate 2, Number 8).

Four chipped stone artifacts commonly referred to as drills or perferators were recovered (Plate 2, Numbers 6-7, Plate 3, Numbers 1-2). The typical form has a broad expanding base which tapers to a slender well-shaped shaft. None of the excavated drills had been reworked from a projectile point, although two examples in the Hahn collection had been made in this fashion.

Two examples of carefully executed quartzite knife-like blades were uncovered. One of these (Plate 3, Number 3) is a fragment 41 mm. in length, 6 mm. in thickness, and tapers from 25 mm. at the broad end to 17 mm. in width at the narrow end. The two longitudinal edges had been beveled (retouched by pressure flaking from opposite sides; one edge had been worked from the one side, and the other edge from the opposite side, so that in cross-section at the narrow end, the form is an elongated parallelogram). The other example exhibits less skillful workmanship but approximates the form of the first (Plate 3, Number 4).

Two relatively unique objects of chipped stone were found at Dg 2 (Plate 3, Numbers 7-8). They are worked on one side only and give the impression of the upper surface of a projectile point. The reverse sides are relatively flat, although they show percussion ripples. There are also small sections on the obverse surfaces which show secondary flak-

PLATE 3

EXPLANATION OF PLATE 3

1. Drill fragment. 2. Drill fragment. 3. Beveled blade fragment of quartzite. 4. Blade fragment of quartzite. 5. Abrading stone. 6. Abrading stone. 7. "Channel flake." 8. "Channel flake." 9. Scraper. 10. Scraper. 11. Scraper. 12. Antler tip. 13 Scraper. 14. Antler tip.

ing. It is assumed that these had once been attached to flaked implements and had been detached either accidentally or deliberately so that in all respects they could be technically referred to as "channel flakes." However, this term has come to have a specific connotation and will not be used here in what would be a different context. These flakes were very likely removed accidentally, for an examination of the projectile points reveals many from which such a longitudinal spall had been removed but in every case the percussion ripples fan out from the tip which was also broken in all cases (Plate 1, Numbers 1-2).

The final artifact of chipped stone is a lanceolate chert knife which is 74 mm. in length, 38 mm. in width, and 13 mm. in thickness. It has been manufactured entirely by primary flaking and, considering the technique, was excellently finished (Plate 2, Number 5).

Abrading stones are represented by two specimens (Plate 3, Numbers 5-6). These are irregular in form and had been shaped only through use. It is assumed that their function was to obliterate the cord roughened surface on some of the vessels.

ANTLER IMPLEMENTS

Only two artifacts of antler were found at this site (Plate 3, Numbers 12 and 14). One was probably the broken tip of a "flaker" (a tool used in pressure flaking) and the other may have been used for the same purpose, but since it is from a much thinner section of antler and is more pointed, it may have been used as an awl.

HISTORIC MATERIALS

Among items of the historic period were fragments of a clay pipe (kaolin) which, unfortunately, could not be reconstructed. It appears to have been decorated by a series of lines scratched into the clay after it was fired. These lines are parallel to the direction of the stem and bowl and are three in number; one on the top, bottom, and one side. On the opposite side the surface area is broken off, but there very likely had been a fourth line to make the overall effect more satisfying esthetically. The lines on the bowl are, in all probability, a continuation of those on the stem.

Other items from about the same period were the broken pieces of a glass medicine bottle of which the neck and shoulder sections were found. One of the fragments gives the appearance of having been pressure flaked, but accidental abrasion might well have been the "chipping" mechanism.

The most curious item is a tapered, brass object which resembles a flagpole tip, or perhaps a tripod leg. It is 50 mm. in length and tapers from a diameter of 23 mm. to 12 mm. A 3 mm. aperture is located 6 mm. above the edge of the opening, presumably to contain a pin to secure the ferrule to a wooden shaft. The tip bears the marks made by its coming forcibly in contact with granular stone, indicating that it either had been hammered with, or on, some type of stone.

The rather obvious problem presented by these items is whether they were the possessions of the aboriginal inhabitants of the site or of early white settlers in the area. Among the factors which tend to indicate that they are part of the aboriginal cultural detritus is the possibility of the pressure flaking on one of the glass fragments and the absence of the other portions of the bottle. It is assumed that if the bottle had been dropped by an early farmer or hunter, he would either have picked up all the fragments or none, but if an Indian noticed that tools could easily be made from this type of "stone" he would have been more likely to have carried off the remaining portion (the flat pieces which could have been worked more easily). The second factor is the decorational lines applied to the pipe. These are of varying thickness and quite carelessly applied and while it is a value judgment to attribute such work to an aborigine rather than a settler, the former seems more logical. The third point is dependent on the brass object and its assumed function, which is the tip of a flagpole. It is well known that flags as well as medals were given to the Indians from the beginning of the historic period up to about 1861. The date given by Mr. Goessl of the Milwaukee Public Museum for the pipe and bottle (1860-1870) seems to favor the material as the possessions of early settlers but does not necessarily exclude other possibilities. For the present it is assumed that these materials represent intrusions of a later culture, but future

work in the area may force a revision of this assumption.

POTTERY Dg 2

Pottery fragments at the Hahn site were relatively abundant for a campsite in this area. Some 700 sherds were excavated and of these, 48 were rim sherds of adequate size for analysis (those less than two square centimeters were excluded). The preponderant number of sherds fall well within the range of those characteristically associated with the Effigy Mound culture which McKern (1930, p. 469) has termed Lake Michigan Ware. In addition, a fair number of shell-tempered sherds, which occurred in the upper levels, have been identified as typical of the Upper Mississippi Phase, Oneota Aspect (McKern, 1953, personal communication). An Early Woodland pottery type, Dane Incised, was also present at the site but in such quantity (4 sherds) as to be insignificant for purposes of discussion or analysis.

In discussing the ceramics of common occurrence at this site, it has been deemed advisable to use the terms already established for some of the types and to tentatively suggest names for other types which are common not only to two of the sites discussed in this paper but to the majority of sites classified under the rather inclusive term, Effigy Mound Culture. While some of the types suggested here have been established on the basis of a limited number of sherds, their validity can in part be verified by a quick perusal of almost any report of a site classified as Effigy Mound, for this will reveal that the majority of sherds can be assigned to one of the suggested types simply on the basis of the illustrations. However, it is quite true that with the small number of sherds used, the complete range of variability has not been established, but with a minimal amount of research in this direction, the entire gamut of variability should easily be determined. Unfortunately, materials of this type were not available to the writer during the period of time in which this report was being prepared.

It is with considerable trepidation that these names are put forward, particularly when renowned scholars of this area, who have greater familiarity and experience with the ceramics in question have refrained from doing so. Perhaps one of the

reasons is ". . . that the pottery generally associated with this culture (Effigy Mound) is exceedingly generalized and it becomes difficult to break it down into types that have meaning," (Rowe, 1956, p. 59). However, the concept of type as used by Phillips, Ford and Griffin (1951, pp. 61-66), and Krieger (1944) is undeniably useful and for all that "types" are artificial or empirical constructs, they can function as a methodological tool which is, in a sense, semi-independent of the cultural values placed on the vessel (or fragment of a vessel) by its makers. Therefore the addition of named types, as a tool for analyzing the complex variety of pottery lumped under Effigy Mound Culture, appears to be a logical step toward the unraveling of this cultural sequence.

The pottery type previously identified and described is Madison Cord Impressed (Baerreis, 1953), but in this report the description will be modified to include variants of common occurrence at the sites being discussed. The two additional types suggested in this report are Madison Plain and Hahn Cord Impressed.

In describing the pottery of Dg 2, the format used by the Ceramic Repository at the University of Michigan will be followed. It should be borne in mind that these descriptions refer **only** to pottery at this site.

Madison Cord Impressed at Dg 2

PASTE:

Method of Manufacture: Probably modeled from a single lump of clay with subsequent utilization of the paddle and anvil technique.

Tempering: Fine crushed grit; a few particles are as large as 4 mm., but most are well below 1 mm.

Texture: Compact.

Hardness: 2.5 to 3.5 (Moh's scale).

Color: Ranges from a light tan through reddish shades to dark brown, smoke blackened areas are common; surface colors tend to remain constant throughout the wall of the sherd.

SURFACE FINISH: The body is covered with fine, to medium, cord-wrapped paddle impressions which characteristically begin below the zone of decoration and

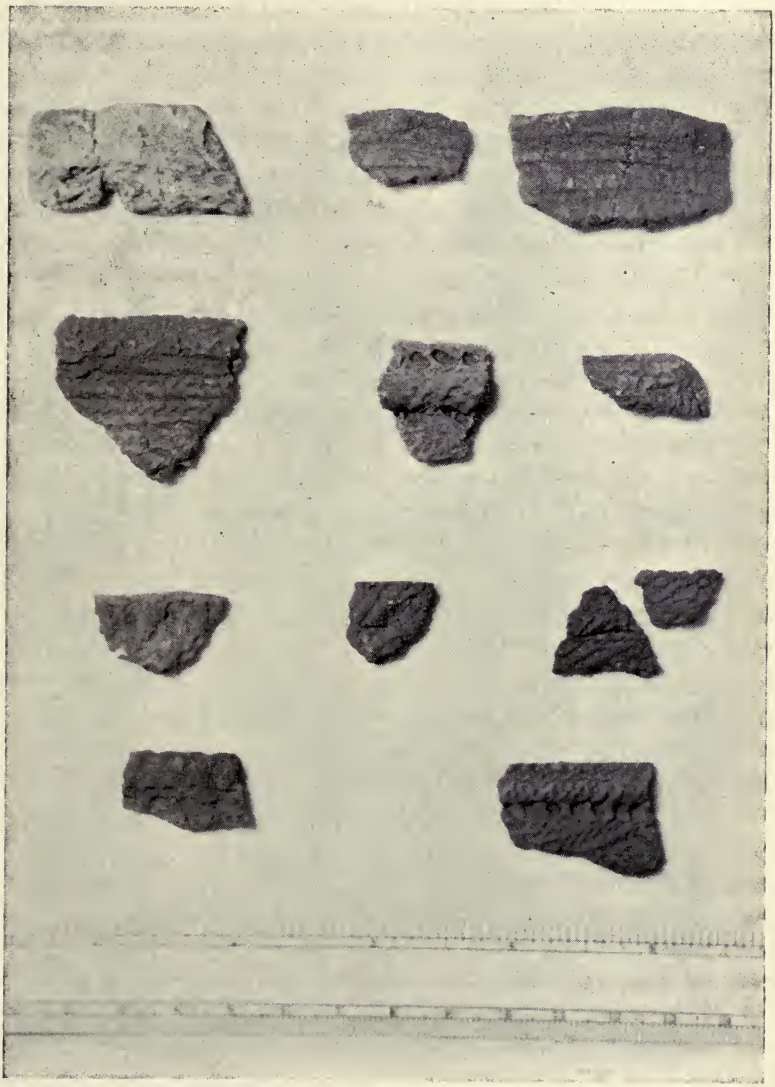


PLATE 4

EXPLANATION OF PLATE 4

Madison Cord Impressed and Hahn Cord Impressed, Dg 2
1, 2, 3, 6, 7 — Madison Cord Impressed.
4, 5, 8, 9, 10, 11, 12 — Hahn Cord Impressed

cover the entire surface of the vessel. The cord marks are vertical on the neck and shoulder but are applied in random fashion on other areas.

DECORATION: The majority of sherds in this group have as their main decorative motif horizontal cord impressions (7 sherds representing 5 vessels). These extend around the circumference of the neck and are arranged in single strands or bands of two or more parallel, twisted cord impressions. One vessel has 2-cord bands (band width 3 mm.) which start 3-4 mm. below the lip and are separated by a slightly wider, smoothed area. The interior bears diagonal cord impressions which extend across the lip. A 2-ply cord was used on the exterior but on the interior and lip a 4-ply cord was used (Plate 4, Numbers 2 and 3). The second vessel has single strand, 4-ply, horizontal cord impressions which begin 12 mm. below the lip. This 12 mm. area is decorated with diagonal cord impressions as are the lip and interior (Plate 4, Number 1). The third vessel is also represented by one sherd. This is an angular corner with single, parallel, 2-ply cord impressions on the exterior and diagonal impressions on the interior and lip (Plate 4, Number 6). Three other sherds of this category have as the dominant decorative theme, diagonal cord impressions which in simplest form consist of a series of single, parallel, twisted cord impressions. On one vessel of this type, represented by a single sherd, a 4-ply cord was used for the exterior diagonal impressions and the loop end was used to apply short (7 mm. length) impressions on the rim interior immediately below the lip (Plate 4, Number 7). Two sherds (one vessell) with essentially the same decoration (not illustrated) differ only in the angle of the cord impressions which is at a very slight diagonal from the vertical plane.

The sherds of this type bearing horizontal cord impressions appear to have been smoothed prior to the decorative treatment, while those with diagonal cord impressions exhibit the conventional cord roughened surface adjacent to decorated areas.

FORM: Lip: Flat or gently rounded.

Rim: Usually vertical but occasionally slightly flaring.

Body: Globular with a marked shoulder and a rounded base.

Diameter: Lip — 215 mm. Shoulder — 270 mm.

Height: 265 mm.

These dimensions are based on one reconstructed vessel (Plate 10).

Dimensions: The range in thickness of rim sherds is 4 to 6 mm., with an average of 5.0 mm.

Hahn Cord Impressed at Dg 2

PASTE:

Method of Manufacture: Same as that of Madison Cord Impressed.

Tempering: Same as that of Madison Cord Impressed.

Texture: Compact. Few grit particles present at surface.

Hardness: 2.5 to 4 (Moh's scale).

Color: Same as that of Madison Cord Impressed.

SURFACE FINISH: Same as that of Madison Cord Impressed.

DECORATION: The distinguished characteristic of this pottery type (9 vessels represented by 13 sherds) is the presence of a fillet or collar, in addition to the decoration characteristically used on Madison Cord Impressed pottery. The term fillet as used in this paper refers to any area that has been thickened by the addition of clay strips, pinching, etc., that is not immediately adjacent to the lip, in which case it would be called a collar. The term collar is defined as any protuberance parallel to the circumference of the vessel and immediately adjacent to the lip. One vessel, represented by a single sherd, has horizontal cord impressions (2-ply cord) and also a series of punctates (made by the loop formed when a 2-ply cord is twisted into a 4-ply cord) 10 mm. below the lips which are about 5 mm. apart. The lip bears diagonal cord impressions which extend down 6 mm. on the exterior surface which is the vertical height of the collar (Plate 4, Number 11). The second vessel, also represented by one sherd, has, in addition to the horizontal, 2-

ply cord impressions, a fillet 4 mm. below the lip which is 2 mm. thick. The lip is also decorated by cord impressions applied at a right angle to the circumference (Plate 4, Number 4). Another variant has a collar, formed by the addition of a strip of clay, which extends 14 mm. below the lip and is 2 mm. thicker than the wall in this region. The collar, as well as the section of rim below it, bear diagonal, 4-ply, twisted cord impressions. The rim interior and flat lip had not been decorated (Plate 4, Number 8). A fourth vessel is represented by a sherd which in addition to diagonal, 2-ply cord impressions, has a fillet 9 mm. wide, 5 mm. below the lip. The thickness is 3 mm. greater than that of the wall above and below it. A series of loop punctates above and below the fillet are also present and in addition, the lip bears diagonal cord impressions (Plate 4, Number 5). The fifth vessel has a fillet (1 to 2 mm. thicker than the wall and 4 mm. in width) beginning ca. 3 mm. below the lip which bears sharp (almost vertical), diagonal, 2-ply cord impressions. Above the fillet are 3 horizontal cord impressions while below it is a row of loop punctates. Below these are diagonal cord impressions which slope in both directions forming a triangular pattern where they meet. There is no decoration on either the lip or the interior (Plate 4, Number 12). One other vessel of this group has a fillet (4 mm. wide, ca. 3 mm. thicker than the wall and begins 6 mm. below the lip) which bears diagonal 2-ply, cord impressions, as do the areas above and below it. The interior is also decorated by a series of diagonal, parallel cord impressions which extend over the lip (Plate 4, Numbers 9 and 10).

The last three vessels of this type differ from those already described by the absence of the characteristic cord impressions. Instead, punctates, which may be combined with cord-wrapped stick impressions, appear as the dominant decoration. One vessel, represented by 3 sherds, is decorated by cord-wrapped stick impressions applied directly over the cord roughened surface. A collar formed by adding a flattened strip of clay, is also

PLATE 5

EXPLANATION OF PLATE 5

Hahn Cord Impressed, Dg 2

present (the vertical distance from the lip to its lower edge varied from 12 to 15 mm.). The cord-wrapped stick was held at a slight diagonal from the vertical on the collar, but on the area below the collar it was held at a slight angle from the horizontal. About 2 to 3 mm. below the collar is a single row of punctates which are spaced about 13 mm. apart. They had been made by using a stick or reed which had been inserted far enough into the clay to form small nodes on the interior of the rim. The lip and interior of the vessel were also decorated with diagonal, cord-wrapped stick impressions (Plate 5, Numbers 1, 2, 3). The second vessel was decorated on the exterior by horizontal rows of loop punctates. The loop was formed by using the end of a 4 strand twisted cord. At least 2 rows of these punctates are present, but because the sherds were broken at this point it is impossible to determine how far the decoration continued. The lip is decorated by diagonal cord impressions, but the interior of the rim is undecorated (Plate 5, Numbers 5 and 6). The third vessel was represented by a single sherd and this was decorated in the same manner as the first except that punctates were not used and finer cord was wrapped about a somewhat smaller stick giving it a slightly different appearance, although the technique used in both cases was identical. (A single impression measures 6 x 3 mm. whereas that of the first vessel measures 8 x 5 mm.). This vessel also has a collar which extends 14 mm. below the lip. In addition, the lip and interior had been impressed with the cord-wrapped stick held diagonally (Plate 5, Number 4).

FORM: Lip: Flat or gently rounded.

Rim: Characteristically straight but occasionally outflaring.

Body: Probably similar to Madison Cord Impressed.

Dimensions: The range in wall thickness of rim sherds is 3 mm. to 6 mm. with an average of 4.7 mm. These figures exclude fillets and collars, which vary in thickness from 2 to 3 mm.

Madison Plain at Dg 2

PASTE:

Method of Manufacture: Same as that of Madison Cord Impressed.

Tempering: Same as that of Madison Cord Impressed.

Texture: Same as that of Madison Cord Impressed.

Hardness: 2.5 to 3.5 (Moh's scale).

Color: Same as that of Madison Cord Impressed.

SURFACE FINISH: The body is covered with fine to medium, cord-wrapped paddle impressions which are verical on the rim but are, in all probability, applied at random below the shoulder.

DECORATION: The distinguishing characteristic of this type is that the sherds have no exterior decoration unless one considers the cord roughened surface as a decorative motif (10 sherds representing at least 7 different vessels). The majority of sherds also lack rim interior and lip decoration. The first vessel has a straight-sided rim with a flattened lip. There are no cord impressed decorations (Plate 2, Numbers 2 and 3). The second vessel, represented by one sherd, has a flat lip and a slightly outflaring rim. It too lacks any cord impressed decoration (Plate 2, Number 1). The third vessel of this group has an outflaring rim with a gently rounded lip. The exterior bears only the functional cord roughening but the interior and lip bear diagonal, 4-ply cord impressions (Plate 2, Number 4).

Some sherds of this type differ from those just described in being somewhat thicker and in having larger temper particles. Two vessels (three sherds) have vertical rims and either flat or gently rounded lips with no lip or interior decoration (Plate 6, Numbers 1, 2, 3). Another vessel has the same rim form, but short (5 mm.) cord-wrapped stick impressions had been diagonally applied to the rim interior (Plate 6, Number 4). The final vessel of this type has a slightly outflaring rim, the interior of which bears diagonal, 4-ply cord impressions 34 mm. in length (Plate 6, Number 7).

FORM: Lip: Same as Madison Cord Impressed.

Rim: Same as Madison Cord Impressed.

PLATE 6

EXPLANATION OF PLATE 6

Madison Plain and Unclassified at Dg 2

Numbers 1, 2, 3, 4, 7—Madison Plain. Numbers 5, 6—Unclassified.

Body: Unknown. Probably similar to Madison Cord Impressed.

Dimensions: The range in thickness of rim sherds is 3 to 9 mm. with an average of 5.3 mm.

Other Pottery at Dg 2

Some sherds uncovered at Dg 2 cannot be assigned to any of the types perviously described and not enough information is available at the present time to warrant the use of a named type for them. For comparative purposes, they will be divided into two groups: Category A and Unclassified. Sherds assigned to the former share the majority of pottery characteristics, while sherds assigned to the latter category differ in most respects from all other pottery types and, in fact, are rather unique at this site.

Category A at Dg 2

Sherds in this category are distinguished by grit-temper and a smoothed exterior surface. The method of manufacture was probably the paddle and anvil technique with subsequent smoothing of the exterior surface. Seven sherds were found which probably represent at least four vessels. The following description refers to 5 sherds (3 vessels), the comments in parenthesis refer to 2 sherds (1 vessel) which occasionally differ in some respects.

PASTE:

Method of Manufacture: Probably the paddle and anvil technique.

Tempering: A very coarse grit with some of the particles ranging up to 5mm. although the average is 2 to 3 mm. (A very fine, sandy grit with none of the particles exceeding 1 mm.).

Texture: Compact and hard, subject to interior exfoliation. (Soft and sandy).

Color: Tan through shades of reddish brown.

SURFACE FINISH: Smooth, although some sherds have the remains of paddle marks which had not been completely obliterated.

DECORATION: Absent on all but two sherds (one vessel). These bear punctate impressions on the exterior

of the vessel. The punctates were made by the rounded edge of a stick.

FORM: Lip: Flat or slightly rounded, some have a slight outward roll.

Rim: Vertical.

Body: Unknown.

Dimensions: The rim sherds range in maximum thickness from 6 to 8 mm. with an average of 6.9 mm.

Unclassified Sherds at Dg. 2

Only two sherds remain unclassified and of these, only one is a rim sherd. The surface is cord roughened and seems to have two, barely visible, trailed lines parallel to the lip. One is 10 mm. below the lip and the other 26 mm. below the lip. In form, the sherd differs from most found at this site for instead of sloping out gently toward the shoulder, it starts curving in below the flat lip, suggesting that the vessel form might well have been a bowl. The sherd is light tan in color and 8 mm. in thickness (Plate 6, Number 5).

The other sherd at first glance, gives the impression of a very thick rim sherd, but a closer examination leads one to suggest another possibility. In its thickness and form, it most closely resembles a basal sherd similar to those of the Sugar Hill Cord Marked jars of the Crab Orchard Focus. (See Griffin, 1952, Figure 98, Number one for an illustration). The sherd wall is 11 mm. thick which is somewhat smaller than the range of 12 to 20 mm. established for this type (Maxwell, 1952, p. 182), but certainly within the range of variation one could expect considering the distance from the type site (Plate 6, Number 6).

Shell Tempered Ware:

Some 95 shell tempered sherds had been found at Dg 2, but due to the difference in construction and firing, it is apparent that they represent only two vessels. The first (I) was well made, apparently by the coiling method, and the variation in wall thickness is extremely slight (Plate 7). This vessel also has a trailed geometric decoration. The other vessel (II) shows extreme irregularity in wall thickness, has a soft, chalky surface and exfoliation is quite common.

These sherds were taken to the Milwaukee Public Museum,

PLATE 7

EXPLANATION OF PLATE 7

Mississippi Pottery vessel (I) excavated from Dg 2

where they were examined by W. C. McKern who identified them as belonging to the Oneota Aspect. (I) was of the Orr Focus type, while (II) was similar to those included in the Grand River Focus.

PASTE:

Method of Manufacture: (I) Coiling.
(II) Probably the paddle and anvil technique.

Tempering: Finely crushed particles of mussel shell.

Texture: Compact.

Hardness: (I) — 2 to 3. (II) — 1 to 2.

Color: Gray to grayish brown.

SURFACE FINISH: (I) A hard compact surface which was pocked with many small orifices where the temper had leached out. (II) A soft, chalky surface which is less pocked than (I); exfoliation more common on these sherds, cord-wrapped impressions on some sherds.

DECORATION: (I) The shoulder area is decorated with incised lines starting immediately below the rim and terminated at the lower edge of the shoulder. The form of design is a combination of curved and straight lines. The design on the largest reconstructed portion of the vessel had two parallel, diagonal lines which began somewhere below the lip and stopped at the lower edge of the shoulder. Arcs were then incised which ran from the lower of the diagonal lines to the lower edge of the shoulder. No other areas of the vessel were decorated. (II) This vessel had no decoration at all, unless one considers the cord roughening that had not been completely smoothed as some form of decoration.

FORM: Lip: (I) Rounded. (II) Flat.

Rim: (I) Flaring. (II) Essentially vertical.

Body: (I) Bowl. (II) Probably a jar.

Dimensions: (I) Rim sherds vary from 8 to 10 mm., with an average of 9 mm. (II) Rim sherds vary from 7 to 8 mm., with an average of 7.3 mm.

Decorated Body Sherds at Dg 2

A number of body sherds were excavated which bore decorations quite similar to those present on rim sherds. Because

of the limited information provided by these sherds, they are simply listed in tabular form according to the type of decoration (Table 1). These are presented in their simplest form because of the inherent difficulty in attempting to determine the proper orientation of the sherd with respect to its position on the vessel from which it came.

It should be noted that all sherds were clustered in the upper two levels except for the Dane Incised which occurred only in levels II and III.

DISTRIBUTION OF DECORATED BODY SHERDS AT DG 2

1. Parallel cord impressions	5	7	1	13
2. Cord impressions bordered by punctates	6	3		9
3. Rows of "knot" punctates	6	1		7
4. Hemi-conical punctates (hollow rod held at angle)	1			1
5. Cord-wrapped stick impressions	3	4		7
6. Incised lines over cord roughened surface (Dane Incised)		3	1	4

THICKNESS DISTRIBUTION OF DECORATED BODY SHERDS *

	2	3	4	5	6	7	8	9	10	11	12	(millimeters)
Type 1		2	4	5	1							
Type 2	1		2	2	3							
Type 3			2	1	3	1	1					
Type 4	1											
Type 5				3	4							
Type 6					1	1			1	1		

* Exfoliated sherds not counted.

TABLE 1

Summary (Dg 2)

In a preliminary report of this type, conclusions must of necessity, be of a somewhat tenuous nature. This is so particularly because of the limited amount of cultural material with which one is forced to work and the relatively small area of the site actually excavated. Nevertheless, some conclusions of limited scope can safely be drawn at this juncture. The final conclusions are presented after the report on the Horicon site (Dg 5).

There is no doubt that the site Dg 2 is of the Woodland Pattern and can readily be assigned to the Effigy Mound culture even though all the variants of pottery on which this conclusion has been based may not have been found in Effigy

Mounds. The basic problem is assigning the site to a relative chronological position within the range of time which has been established for this culture. Some insight to the problem can perhaps be obtained through a discussion of the stratigraphic distribution of the excavated materials and since pottery is invariably considered the most diagnostic of all artifacts used for this purpose, it is logical to begin here.

The use of ceramics for analytical purposes is, for the most part, limited to a very small section of the vessels, namely the rim sherds. Ideally, complete vessels would be most suitable for an analysis of this type, but unfortunately these are found all too rarely. In fact, even to find sufficient fragments of a single vessel to reconstruct it accurately is an occasion that occurs very seldom during a major excavation. Therefore, only the sherds of vessels remain with which to work and of these, only the rim sherds differ sufficiently for use in separating vessels. The sherds from below the shoulder area are either cord roughened or smoothed in Woodland vessels and except for these two categories the sherds are indistinguishable from each other. While there may be slight differences in the size of the particles used as temper and also in the diameter of the cord which was wrapped around the paddle, no techniques have yet been developed to successfully utilize these minor differences as criteria for differentiating vessel types.

For all that rim sherds are the most sensitive indicators of change, the rim sherd distribution chart, (Table 2) shows the sample to be quite small and without a great deal of variation through the three levels which yielded the greatest quantity of materials. This sample is fairly typical of Woodland sites, especially camps or villages, and unless more funds are made available in the future than have been allocated to archaeological research in the past, this is the type of sample which must be used to unravel the scarcely known prehistory of the state. This being the situation, all that can be done is to make the most of the data available. Even with this sample, which any self-respecting statistician would dismiss as inadequate, some information can be interpolated; if this can be corroborated by other evidence, the conclusions thereby

drawn should be accepted as valid.

DISTRIBUTION OF RIM SHERDS BY LEVEL

	Madison Cord Impressed	Hahn Cord Impressed	Madison Plain (Thin sherds)	(Thick sherds)	Total	Mississippi	Category A	Unclassified
Level I	3	6	(2)	(2)	4	2	1	0
Level II	3	7	(3)	(3)	6	4	3	2
Level III	1	0	(0)	(2)	2	1	3	0
TOTAL	7	13	(5)	(7)	12	7	7	2

TABLE 2
Actual Numbers

Level I	43	46	(40)	(29)	34		29	14
Level II	43	54	(60)	(42)	50		57	43
Level III	14	0	(0)	(29)	16		14	43
TOTAL	100	100			100		100	100

TABLE 3
Percentages

To return to the rim distribution chart, it should be noted that most of the rim sherds occur in levels I and II, as do most of the body sherds and, indeed, most of the artifacts and cultural detritus. It would appear discouraging to attempt conclusions based on such a limited sample clustering as it does in two levels, yet the situation is somewhat better than appears on the surface. In the case of Madison Cord im-illegibility and confused marking of the bag in which this pressed sherds only one occurred in level III and because of sherd was placed, there is more than a little doubt as to the correctness of the stratigraphic placement. Of the other two pottery types which share most of their characteristics with Madison Cord Impressed (Madison Plain and Hahn Cord Impressed), only two sherds were found lower than level II and these were the thicker variants of Madison Plain. In the distribution chart, Madison Plain sherds have been subdivided into thick and thin sherds with 5 mm. as the diagnostic

criterion for division. In the event differences in level of occurrence do exist at the site, it is felt that they are more likely to appear if "splitting" rather than "lumping" techniques are used since the latter method invariably over-simplifies the picture. There may well be a difference in the stratigraphic context of these pottery types and it is suggested that Madison Cord Impressed, Hahn Cord Impressed, and the thinner sherds of Madison Plain are later in time than the other forms of pottery. Additional evidence which seems to corroborate this hypothesis includes at least one instance of a Hahn Cord Impressed sherd from level II fitting a sherd from level I. There are two other examples of sherds from these two levels having come from the same vessels. Although they could not be fitted together, the uniqueness of the sherds leaves little doubt that they came from the same vessels. Several like examples occurred with Mississippi sherds but in fitting together the thick Madison Plain, and Category A sherds, the only combinations noted were with sherds from levels II and III. It is quite possible that these categories are actually deeper in the deposit than the other types, but the fact may be obscured by the size of levels used. In other words, if four 3-inch levels rather than three 4-inch levels had been used, the difference in level of occurrence of these types might have been more accentuated.

This difference is of course indicated by Table 2 and even more impressively by the percentage distribution chart (Table 3), but it should be borne in mind that these percentage figures are based in small numbers and that even minor changes here could alter the percentage frequencies drastically. All in all, the information available suggests that the thick Madison Plain and Category A sherds may have temporal precedence at this site, but again, caution must be exercised because of the small sample.

The body sherds are of some assistance in providing information regarding the relative time sequence at the site; at least for some of the pottery types. Although four sherds of Dane Incised pottery were found at the site, it was felt that this small number, when compared to the total number of sherds, was relatively insignificant. Their level of occurrence

is listed on Table 1 and it might be noted that these sherds are confined to levels II and III. It is also of some significance that all the body sherds bearing Madison Cord Impressed or Hahn Cord Impressed decorations, with one exception, were found in the two uppermost levels. It should be apparent from the distribution of measurable body sherds (Table 4) that both surfaced and cord roughened sherds precede Mississippi pottery at the site, since none of the latter occurs below level II. Unfortunately, it is impossible to distinguish Madison Cord Impressed and Hahn Cord Impressed body sherds from those of Dane Incised and perhaps other earlier types (such as the thicker sherds of Madison Plain?) which may be present at the site. While it is true that on the average, the Madison Cord Impressed type wares tend to be much thinner, there is a definite overlap so that size alone cannot usually be used as a distinguishing criterion. There is also a difference in the size of the grit used as tempering material, but since the temper is quite often unequally distributed throughout the vessel, it cannot accurately be used to separate them. In the final analysis, the only practical way of separating the pottery types is on the basis of rim sherds.

DISTRIBUTION OF MEASURABLE BODY SHERDS AT Dg 2

	Cord Roughened					Shell Tempered			Smoothed Surfaced			
Level	I	II	III	IV	V	1	II	III	I	II	III	IV
(mm.)												
2	2	2	2									
3	7	9	7			1	1					
4	43	62	8	3	1							
5	96	47	11	4		7	12		4			
6	50	46	4	3		1	6		12			
7	20	26	3	1		2			5		7	
8	5	20	2			2			4	3	3	
9	3	9	1							2	5	
10	2	2	1							3	1	
11			2									
12		1								1		
Thickness												
Totals	228	224	43	11	1	17	26		26	8	18	

Cord Roughened Sherds:
Mean of level I — 5.3
Mean of level II — 5.5
Mean of level III — 4.9
Mean of level IV — 5.1
Average (all levels) — 5.3

Mean, Shell Tempered Sherds — 5.05
Mean, Smooth Sherds — 7.3

TABLE 4

Although few methods have been developed for analysing body sherds, they can be used to illustrate some general aspects of a site; size and temporal depth to mention two. In attempting to derive further information from the cord roughened sherds it was found that by constructing graphs (Figures 2 and 3) showing the sherd thickness for different levels, differences did occur which were not evident from a simple computation of the mean, or mathematical average. For example the variation in mean thickness, when computed for each level, was very slight (for level I the mean was 5.3 mm., and for level II it was 5.5 mm.), yet the mode (most frequent value in a series) differs considerably from the samples from the two levels: Level I had, for all practical purposes, a mode which was identical to the mean (the mode was 5.0 mm. and the mean was 5.3 mm.), but level II had quite a different distribution; here the mean was 5.5 mm. while the mode was 4.0 mm., and in addition, there was a much greater difference in the frequencies immediately above and below the mode than occurred in level I. In level I the frequencies above and below the mode were approximately the same (43 sherds which were 4 mm. in thickness and 50 sherds 6 mm. thick). In level II the corresponding figures were 9 sherds of 3 mm. thickness and 47 which were 5 mm. thick. Morevover, there was a difference in the shape of the curve, especially at both extremities. Thus level II had more thick sherds, more thin sherds, and fewer mid-range sherds than did level I. The difference appears to be a significant one and since the samples are of approximately the same size and the sampling method was the same for both levels, it is unlikely that the difference is due either to sample size or to sampling method. The same cannot be said of level III where variations also occur, but where the sample size is so small in comparison to levels I and II, that it may be the sole cause of deviation.

The actual cause of the variations between level I and level II is not readily apparent, but one possibility is that level II represents a period when two separate vessel types, differing in thickness and size were being produced, and if the sherds could be separated on this basis, the bimodal distribution hinted at in Figures 2 and 3 might well be indicated. If one

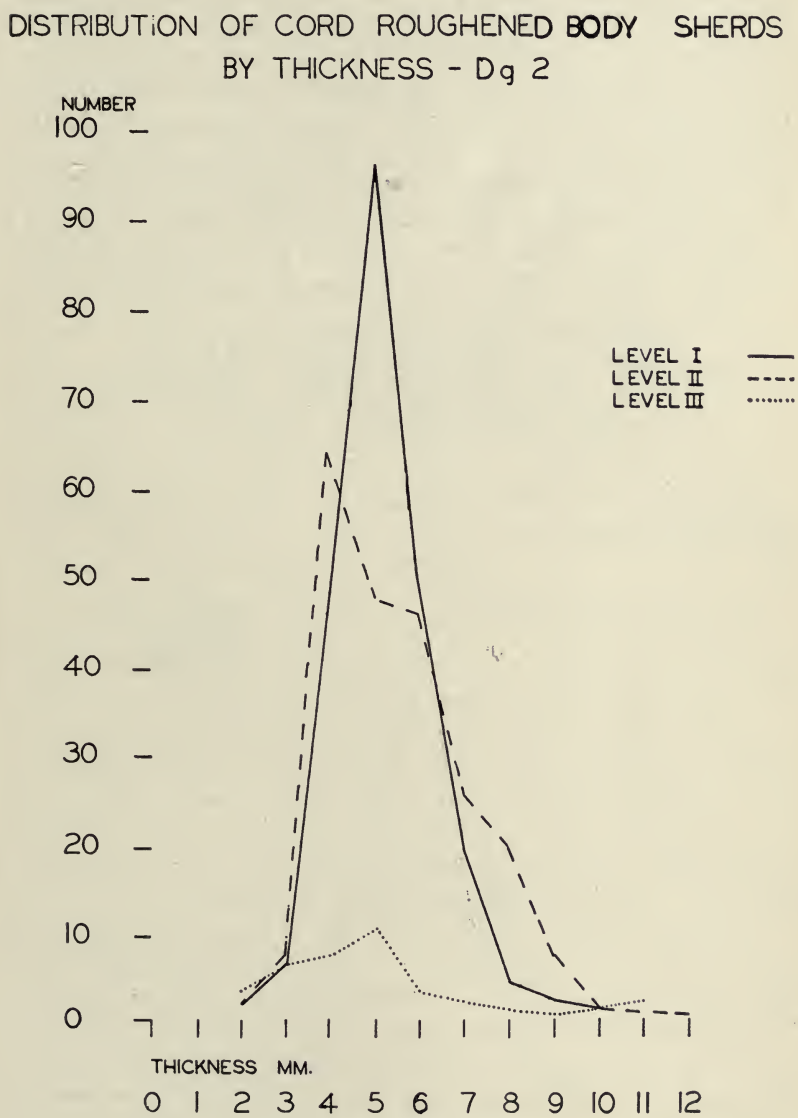

DISTRIBUTION OF CORD ROUGHENED BODY SHERDS
BY THICKNESS - Dg 2
NUMBER
100
90
80
70
60
50
40
30
20
10
0
LEVEL I
LEVEL II
LEVEL III
THICKNESS MM.
0 1 2 3 4 5 6 7 8 9 10 11 12

FIGURE 2

may interpolate from the graph, mean thicknesses of 4 and 6 mm. would be a distinct possibility although the average thickness of the two hypothesized vessel types might logically be even further apart with the thicker of the two approaching the range established for some earlier pottery types. Even though this data is somewhat tenuous, it does tend to corroborate the stratigraphic distribution of rim sherds. Further, it can be pointed out that approximately 25 per cent of the cord roughened sherds found in level II are 7 mm. or more in thickness, whereas this same thickness range of sherds from

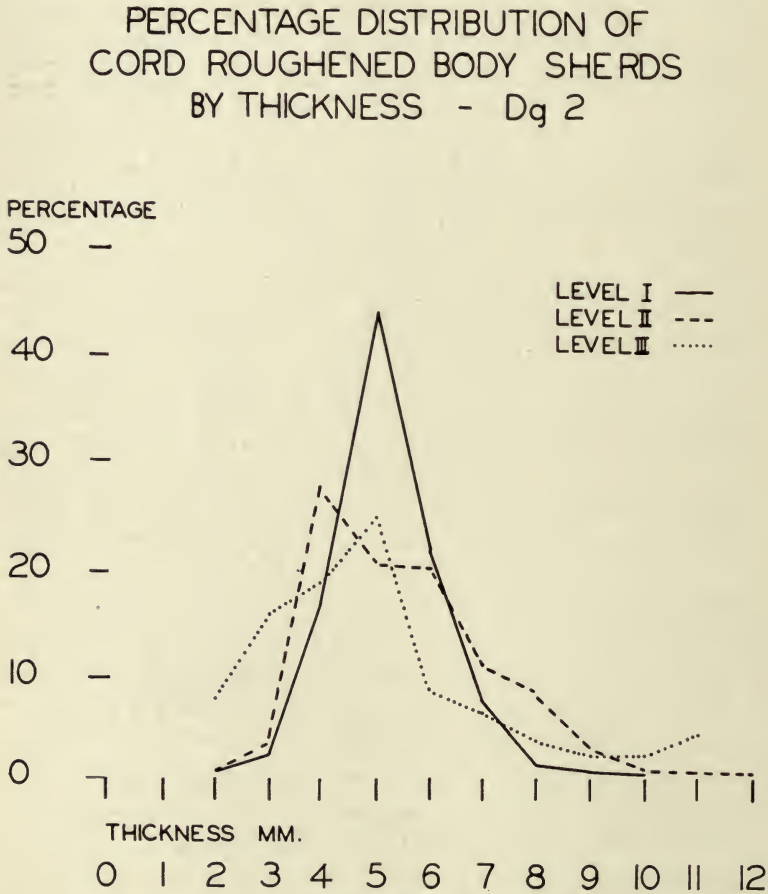


FIGURE 3

level I constitutes only 13 per cent of the total. Thin sherds exhibit a similar trend where sherds 4 mm. or less in thickness found in level II constitute 33 per cent of the total as compared to 23 percent for level I. Whether it is justifiable to correlate these thicker sherds with the thick Madison Plain and possibly other early pottery types and the thinner sherds with Madison Cord Impressed types is open to some question, but it is the author's opinion that it can be done on the basis of the evidence available.

These data (distribution of rim sherds, variation in the frequency distribution of sherd thickness in the two levels, and the relatively high percentage of thick and thin sherds in level II), if considered singly would have to be discarded as unusable for any sound conclusion, yet when all aspects are considered they tend, by sheer dint of numbers, to support the conclusions drawn. Subsequent excavation and research will either verify or disprove these conclusions, and the methods by which they were obtained.

A graph (Figure 4) was also prepared, plotting the distribution of the cord roughened, smooth-surfaced, and Mississippi body sherds. As might be expected, differences did occur, but because of the small number of smooth-surfaced and shell-tempered sherds, some of the variation may well have been due to the sample size. It might be mentioned here that a number of individuals have suggested the possibility that these smooth-surfaced body sherds may have come from the basal area of vessels where the smoothing had taken place by wear and abrasion of the supporting surface. It is interesting to note that this concept seems to be indicated on the graph where the range of thickness is definitely skewed toward the thicker sherds. These sherds could be basal sections of vessels, but on the other hand, smooth-surfaced rim sherds have been found at this site.

There is little doubt that the Upper Mississippi pottery, which with one exception occurs exclusively in the upper two levels, is fairly recent at the site. Just how recent in relation to the Madison Cord Impressed types is entirely dependent on interpretation of the available data. It was pointed out previously that the Mississippi sherds very likely represent

but two vessels. What this means in terms of the cultural sequence at this site is a problem not easily resolved. There appear to be at least two possibilities.

1. The vessels (or perhaps only one vessel) were obtained from Upper Mississippi peoples by trade or in some other fashion by peoples whose traditional method of pottery manufacture was of the Woodland tradition.

2. This site was used by Upper Mississippi peoples subsequent to its occupation by Woodland peoples.

While the latter interpretation might be preferred by many,

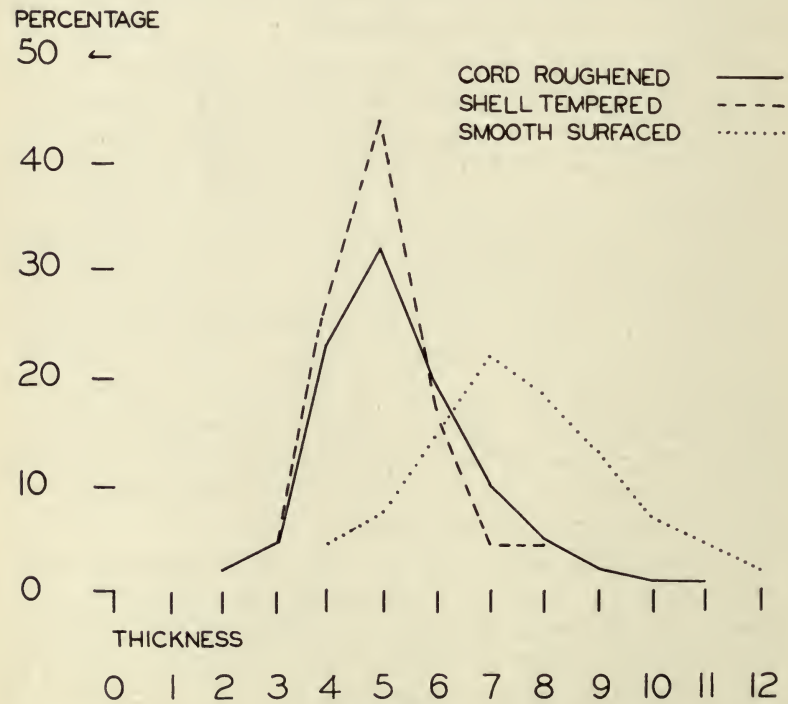


FIGURE 4

the author favors the former for several reasons, each of which is admittedly based more on interpretation than actual evidence. Moreover, if there is a contemporaneous association of Mississippi and Effigy Mound Pottery, it is not the first such example to have been found. Maxwell (1950, p. 442) describes a bowl, characteristic of the Orr Focus, which was excavated from mound 26, a Panther effigy, at the Diamond Bluff site which yielded primarily Effigy Mound pottery. Also excavated from this site was a bowl which combined stylistic elements of both Upper and Middle Mississippi culture. In Minnesota, Wilford (1955, pp. 134-135) has pointed out that shell-tempered pottery infrequently occurs at sites of the Malmo Focus, Mille Lacs Aspect and also at some Kathio Focus sites, which at least in the latter instance is interpreted by Wilford as indicative of Oneota contacts.

At the Hahn site the second Mississippi vessel gives every indication of an attempt to imitate a ceramic tradition not familiar to the maker. If this is the case, the end product was certainly not successful for cord-wrapped paddle impressions are visible on many sherds, and the surface is soft and chalky. Moreover, the wall thickness is extraordinarily uneven, and because of the type of sherd fracture and commonness of exfoliation it seems quite likely that the paddle and anvil technique rather than the coiling method was used in its manufacture. A similar conclusion was drawn by Wilford in reference to the Mississippi sherds found at Kathio sites. He states that, "The shell-tempered sherds are for the most part not intrusive Oneota sherds, but are believed to be attempts of Kathio potters to copy Oneota models, or to adopt the Oneota method of manufacture." (**Ibid.** p. 135)

That these associations of Effigy Mound and Oneota (or Oneota-like) pottery are not unique is attested by at least one other mound group in Wisconsin. It is suspected that Mississippi sherds may have been found at several other Effigy Mound sites, but had simply been dismissed as intrusive material. At the McClaughry Mound groups, McKern noted three different pottery types, the first of which, type I (McKern, 1928, pp. 266-268), would now be considered to include most variants of woodland pottery from early to mid-

dle, and possibly late. All types of common occurrence at Dg 2 are represented in McKern's illustration (**Ibid.** Plate LIV) which also includes types not represented at this site. Part of the reason is due to the fact that his illustration includes not only sherds from several groups of mounds at McClaughry, but also sherds from several groups at the Neale Mounds site. Since these mounds were not all constructed at the same time, and in fact are now believed to have been constructed over rather a long period, it is quite probable that specific mounds within a group belong to different time periods. Thus when mounds within a group, groups within a site, and finally groups from different sites are combined and considered as a single unit, the chance that the pottery and other artifacts from these mounds represent a considerable time span is tremendously increased. At any rate, Effigy Mound pottery comparable to that found at Dg 2 was obtained from some of the mounds of one or more groups at the McClaughry site.

The type II pottery described by McKern (**Ibid.** pp. 268-270) is undoubtedly Upper Mississippi in cultural affiliation and on the basis of the illustration (**Ibid** Plate LV), appears to be of the Oneota Aspect. The third type (**Ibid.** pp. 270-271) is represented by a single sherd and although it appears to be a smooth-surfaced sherd, insufficient data are provided, making any comparison with pottery from Dg 2 not feasible.

Here then are several examples of an admixture of Mississippi and Effigy Mound pottery, with both Wilford and Maxwell suggesting contemporaneity of the two cultures. The situation is evaluated by Maxwell as follows:

"An interpretation of these apparently conflicting facts can be made only after a reanalysis of our existing frame of reference. First, since there is no reason to doubt that the effigy mound complex is early in Wisconsin, we must assume either that the idea of the animal-shaped burial mound persisted until late times in some areas, or that Upper Mississippi culture begins in Wisconsin much earlier than we had previously supposed. In all probability the true picture is a compromise between the two suggestions." (Maxwell, 1950, p. 442). On the basis of available evidence there can be little

disagreement with Maxwell's statements, but on the other hand, there is little in the way of recently published material clarifying the temporal position of Upper Mississippi. Early archaeological assumption of the development of Upper from a Middle Mississippi base is no longer universally held. Moreover, W. C. McKern has suggested that both the Upper and Middle phases were derived from a common source (Ritzenthaler, 1952, p. 227). Without a fairly accurate estimate of the initial date for Upper Mississippi, the association of cultural elements of this phase with those of Effigy Mound culture can have significance only in terms of cultural continuity of temporal contiguity. Temporal placement of the Upper Mississippi phase is far beyond the scope of this paper, but the writer is inclined to agree with McKern's idea and suggest that it may have been coeval with Aztalan or may actually have temporal precedence.

One other factor which seems to verify the thesis that this site is later in time than most Effigy Mound sites thus far reported, is the presence of one, angular-cornered rim sherd (Plate 4, Number 6). This rim form is considered to be late in time and numerous examples have been found associated with Middle Mississippi pottery (Barrett, 1933). This sherd lacks a collar and is considerably thinner than the majority of sherds from Aztalan, and in all likelihood is simply a late variant of Madison Cord Impressed.

Additional evidence supporting the hypothesis that this site is late in time, includes the types of projectile points excavated and their stratigraphic distribution. The triangular variants are perhaps most diagnostic in this situation since in this North-central region they are invariably considered to be fairly late in time. The fact that they occur only in the upper two levels, and preponderantly in the uppermost level, is interpreted as significant. Triangular points of this type (Plate 1, Nos. 6, 7, 8) have long been considered diagnostic of the Mississippi Pattern. However, on the basis of excavations at other sites it seems quite probable that they may also be diagnostic of the later phases of Effigy Mound culture. This matter is considered in greater detail in the final section of this report. It is sufficient to say at this point,

that in the author's opinion the Madison Cord Impressed types of pottery are definitely associated with these late triangular points.

The Horicon Site (Dg 5)

This site was called to the attention of the University of Wisconsin staff in the Spring of 1953 by Mr. Richard Hunt of the Wisconsin Conservation Department, who made a rather thorough surface collection at this site. In addition to reporting the site, Mr. Hunt sent a sample of the material he had found to the Department of Sociology and Anthropology. Upon examination of this material, it was immediately apparent that the pottery fragments were quite similar to those being excavated at Dg 2, but due to the press of other activities, it was not until summer of that year that University personnel were able to investigate this site. A group of graduate students, working under the direction of Professor David A. Baerreis, were in the area testing a number of sites as one phase of the Wisconsin Archaeological Survey. The tests made at Dg 5 were part of the overall survey program.

The Horicon site, as indicated by its name, is located near the town of Horicon and is within the boundaries of the state and federal Horicon Marsh Wildlife Area. The exact location is Section 2, Township 13 North, Range 15 East, Dodge County, Wisconsin. The site is at the base of a small knoll a short distance from the Rock River and is about thirty miles northeast of Dg 2. It might be noted that the river, a short distance from each of these sites, would have been ideal for transportation in aboriginal times.

If the marsh at the present time even remotely resembles its pre-historic condition, it must have been a veritable paradise to the aborigines of the state. The water contains several varieties of fish, and the marsh sections and shore literally abound with waterfowl of all kinds. In suitable wooded areas adjacent to the marsh, small game is plentiful and in recent years the number of deer have been steadily increasing, although it is unlikely that the size of the pre-contact deer population has been approached (Bersing, 1956, pp. 108 and ff). There is every reason to suspect that this game refuge was ideally suited to the needs of semi-nomadic, hunters

and gatherers. Bruder's comments on the Horicon Marsh should prove helpful in visualizing this area.

"The entire 12 mile east border of the huge Horicon Marsh area of about 50,000 acres, contains many groups of prehistoric earthworks flanking the ancient and formerly heavily used trail. It is a common occurrence to survey five and six adjoining farms with large groups of effigy mounds, some of them unusual in design.

About 300 mounds of all kinds, have been surveyed and recorded, but a far larger total remain unrecorded. The symmetrical design of certain rare type effigies, requires considerable time and patience in surveying. In nearly all places, the site of the historic villages and campsites, yield evidence of prehistoric occupation of several different cultures.

The geological origin of the Horicon Marsh, gave this area many unusual advantages from remotest antiquity, in providing a fruitful and generous subsistence to the various tribes who had occupied this area. Its creation dates back to the last Wisconsin Ice Sheet, specifically its Green Bay Lobe, which ground out a large shallow basis, about 14 miles long and 7 miles wide, leaving it a natural lake with an original bottom consisting of a layer of stratified sand. The glacial moraine dyke at Horicon was soon topped by the accumulation of waters on its upper side, which eventually cut it down. At the same time, glacial stream outwash partly filled in this lake with clay, crushed gravel and sand. The erosion and lowering of the glacial lake level stopped abruptly, when the Rock River reached the hard Galena-Dolomite rock strata in its bed at Hustisford Rapids, seven miles downstream from Horicon. This solid rock strata has acted as a natural dam, since geological ages, maintaining a fairly constant level of water, north to the Fond du Lac county line. Sediment from the adjoining streams gradually filled in, and the growing vegetation formed peat bogs 6 to 8 feet thick, a process requiring many centuries to complete. It was this very uniform level of water, existing from remote ages, that permitted the luxuriant and undisturbed growth of the ancient flora, particularly the vast beds of wild rice and cranberries. All kinds of fish and waterfowl were found there in immense numbers. The original surveyor's field notes, describe this east border as solid timber, with the sugar maple predominating over entire townships. Many kinds of nut and fruit trees are existent at the present time." (Bruder, 1953, pages 1-3.)

This description presents the Horicon Marsh as a highly desirable place during aboriginal times, which it undoubtedly was; however, from the quantity of material excavated at Dg 5, it would appear that the stay of Effigy Mound peoples at this particular site was rather short.

The sample of cultural material from this site was obtained in two ways; surface collecting and excavation, with the first method supplying the bulk of pottery and lithic materials. The writer is indebted to Richard Hunt, who did most of the surface collecting and who also turned the material over to the University. The excavation method used at this site employed test pits which were dug at the base of the knoll, the knoll proper, and out on the level area which is now cultivated field. The excavation units used were two foot squares which were taken down by three inch levels. It is unfortunate that neither time nor funds were available to excavate this site more thoroughly so the results would be more directly comparable to those of Dg 2 where five foot squares and four inch levels were the standard used. The area containing the heaviest concentration of cultural debris was that at the base of the knoll. The area tested on the knoll and out into the field was, for all practical purposes, sterile. This indicates either that the camp was spread out along a fairly long, narrow strip, or more logically, was located on the knoll but the material subsequently washed down to the section where it was found. Five test pits were dug in this area of concentrated material.

The total amount of material obtained from this site appears rather impressive at first glance; some 850 pottery fragments, 15 projectile points or point fragments, 41 primary flakes, 4 drills, a bone point, and a considerable quantity of bone refuse were found. Of these, 465 sherds, 2 chipped stone points, the bone point, and most of the primary flakes and bone refuse constitute the excavated sample. However, considering only the material that could be used for analysis, the sample was considerably smaller. Many of the sherds were too small to be of any use whatsoever, and as is normal, most of the sherds were from the body section of the vessels, which are of little use in identification and analysis.

PLATE 8

EXPLANATION OF PLATE 8

Lithic material from Dg 5

(All measurements in millimeters)

Number	Length	Width	Thickness	Stem Length	Notes
1.	39	22	5	—	convex base
2.	32	22	5	—	convex base
3.	—	23	5	—	convex base
4.	—	23	4	—	convex base
5.	27	18	7	—	convex base
6.	25	18	5	—	straight base
7.	22	17	5	—	convex base
8.	31	18	5	—	convex base
9.	48	25	10	15	tang
10.	21	16	6	11	Monona stemmed
11.	31	16	6	—	drills
12.	38	20	10	—	—
13.	39	23	10	—	—
14.	31	14	7	—	—
15.	34	10	4	—	bone point

Chipped Stone Artifacts

The assemblage of chipped stone artifacts from the Horicon site consists primarily of projectile points (Plate 8), and of these, simple triangular points are by far the most numerous (8 of the total of 10 identifiable points). All of the points are of chert which varies in color from off-white through shades of light tan to light gray. Only two points vary in color (Plate 8, Numbers 8 and 9); one is a reddish and gray mottled color (Number 8) and the other is slate gray (Number 9). The blades of the triangular points are moderately convex and all, with but one exception, have convex bases. The exception (Plate 8, Number 6) has a straight base. This situation is the exact opposite of that at Dg 2 where all of the triangular points except one had straight bases. These points range in size from 39 to 22 mm. in length, from 23 to 17 mm. in width, and from 4 to 7mm. in thickness. Of the two points which deviate from this triangular category, one appears to be Monona Stemmed (Plate 8, Number 10), while the other is a double-shouldered, tanged point with a slightly contracting stem. Similar points occurred in the Hahn collection, but none were excavated at Dg 2. It should be noted that this point was found in a nearby field, rather than the site proper and so the chances are that it should be excluded from those points designated as characteristic of Dg 5.

Four chipped stone artifacts are of the type generally re-

ferred to as drills, (Plate 8, Numbers 11-14). These taper from the base to the tip and are characteristically pressure flaked on both edges. The basal sections had been broken off and none were found at the site.

BONE ARTIFACTS

The only bone artifact excavated from this site was a small, pointed and flattened, long bone splinter (Plate 8, Number 15). This had been made by cutting or scraping to the desired shape without any attempt being made at subsequent smoothing. The small notch visible on the photograph was caused by rodent gnawing rather than aboriginal intention. The dimensions are: length 34 mm., width 10 mm., and thickness 4 mm.. The exact function of this bone object is unknown for although it could have been used as a projectile point, it would have served equally well as a perforator. The use of the term point here is meant to convey shape rather than function.

POTTERY

The assemblage of pottery types at this site was similar to that of Dg 2, however, at least one type present at Dg 2 was absent at Dg 5 (Mississippi), and this latter site had forms of pottery not found at Dg 2. Sherds found at this site but not at Dg 2 include a few which had been smoothed prior to the application of rocker stamping, a technique usually considered diagnostic of Hopewellian influence. With the exceptions noted, there is little difficulty in classifying sherds using the types established at Dg 2. Although there is some decorative variation, there is no more than one would expect in material from sites with a slight temporal or spacial difference. In describing the pottery types, the format used for type descriptions has been followed here to facilitate cross references.

Madison Cord Impressed at Dg 5

PASTE:

Method of Manufacture: Probably the paddle and anvil technique.

Tempering: Fine crushed grit with few particles exceeding 2 mm. and most well below 1 mm. in size.

PLATE 9

EXPLANATION OF PLATE 9

1 - 8 — Madison Cord Impressed. 9 — Hahn Cord Impressed. 10 - 14 — Madison Plain. 15 — Rocker Stamp body sherd. 16, 17, 18 — Category A.

Texture: Compact.

Hardness: 2.5 to 3.5 (Moh's scale).

Color: Ranges from light tan through dark brown; smoke blackened areas are common; surface colors tend to remain constant throughout the wall of the sherd.

SURFACE FINISH: The body of the vessel is covered with fine to medium cord-wrapped paddle impressions. Decoration, when present, is confined to the rim of the vessel.

DECORATION: Sherds of this type (25 sherds representing 18 vessels) exhibit a fair degree of decorative variation and although it is believed that all are contemporaneous, they are described here in three groups in the event that future reseachers may find it feasible to subdivide this pottery into more rigidly defined units. The three decorative variants include sherds which bear:

1. Horizontal cord impressions.
2. Diagonal cord impressions which may be combined with horizontal cord impressions.
3. Punctate impressions of the knot or loop variety and/or fingernail impressions.

1. Sherds of this group have as their primary decorative motif, in accordance with Baerreis' original type description, horizontal rows of twisted cord impressions (7 sherds representing 7 vessels). The sherds differ from those of Dg 2 mainly by the numerical importance of simple designs, the most common of which consists of widely spaced rows (5 to 8 mm.) of single, horizontal cord impressions applied directly over the cord roughened surface. This decoration was used on five sherds although only two are illustrated (Plate 9, Numbers 5 and 6). The interiors of these sherds exhibit a wide variety of decoration: one has vertical cord imprints; two have diagonal cord imprints; one has horizontal bands of single cord impressions which differ from those of the exterior only in being spaced somewhat closer together (5 mm. as opposed to 8 mm. on the exterior); and finally, one sherd had no interior decoration. In two cases the diagonal cord impressions of the interior extended di-

agonally over the lip. The two sherds of this group (two vessels) were decorated by having the horizontal rows of cord impressions arranged in closely-spaced equidistant bands. The lips of both sherds were decorated with diagonal cord impressions, but on only one were these carried over the interior of the rim (Plate 9, Numbers 3 and 4). The exterior surface of these sherds was apparently smoothed prior to the application of the cord impressions.

2. Those sherds, which have diagonal cord impressions as the primary decorative motif, have also had, with only three exceptions, the decoration applied directly over the cord roughened surface (10 sherds representing no more than 4 vessels). The majority of vessels represented can also be distinguished from those of Dg 2 by the simplicity of the decoration. Three of the vessels, represented by 8 sherds, have rows of diagonal impressions as the sole exterior decoration (Plate 9, Numbers 7 and 8). As in the case of the first decorational variant, considerable variety is evidenced in the treatment of the rim interior. One vessel has interior cord impressions on the same diagonal as the exterior, another has the interior diagonal impressions slanting in the opposite direction of those on the exterior, while the third vessel has no interior decoration. The sherds of the fourth vessel are decorated by both diagonal and horizontal cord impressions (Plate 9, Numbers 1 and 2). Immediately below the lip a 12 mm. band of horizontal cord impressions was applied, then a row of vertical loop impressions was applied to the center of the band. Below the horizontal band, rows of three parallel cord impressions on the diagonal were applied with intervening smoothed areas of the same width as the bands. These probably continued to the shoulder area (the largest sherd was 47 mm. in length, but neither the shoulder, nor the end of the decorated area had been reached). Diagonal cord impressions were also used to decorate the lip and interior of the rim.

3. This group of sherds (8 sherds representing 7 ves-

sels) was decorated on the exterior solely by punctates, most of which were of the knot or loop variety. The only exceptions were two sherds (probably from the same vessel) which have no exterior decoration except for a row of fingernail impressions at the juncture of the lip and rim, which continue around the circumference of the vessel. The lip is decorated by a series of diagonal cord impressions which continue into the rim interior (not illustrated). The punctate impressions on at least three other sherds (three vessels) appear to be arranged in vertical rather than horizonal rows. These rows are about 17 mm. apart and the punctates are about 8 mm. apart vertically. Considerable variation occurs in lip treatment: One sherd has diagonal cord impressions across the lip, but on the interior a cord-wrapped stick was held vertically and applied with sufficient pressure to form a slight scallop when viewed from the top (Plate 9, Number 4). The other two sherds have no lip decoration but the rim interiors bear diagonal cord impressions. Three sherds had horizontal rows of knot punctate impressions; of these, one had diagonal cord impressions across the lip and the interior, one had no lip or interior decoration, and the third had no lip decoration, but the interior bore vertical cord-wrapped stick impressions, again resulting in a wavy rim.

FORM: Lip: Flat or gently rounded (the variants bearing horizontal cord impressions, with only one exception, had flat lips).

Rim: Usually vertical, but occasionally outflaring.

Body: Globular jar.

Dimensions: The range in thickness of all rim sherds is 4 to 7 mm. with an average of 5.8 mm..

Decorational variant 1 ranges from 5 to 7 mm. with an average of 5.5 mm..

Decorational variant 2 ranges from 6 to 7 mm. with an average of 5.2 mm..

Decorational variant 3 averges from 5 to 7 mm. with an average of 6.1 mm..

Hahn Cord Impressed at Dg 5

Only one sherd of this type was found and it differs somewhat from those excavated at Dg 2 (Plate 9, Number 9). The collar was formed by the pressure exerted when the loop end of a 4-ply cord was applied to the lip. These impressions were applied at a right angle to the circumference from both the interior and exterior of the vessel, but do not meet in the center of the lip. Except for these short (ca. 5 mm.) impressions, the sherd was not decorated. The sherd is light tan in color, has a vertical rim, a flat lip, and is 5 mm. thick below the collar (the collar itself is 10 mm. thick). In paste characteristics the sherd is identical to Madison Cord Impressed.

Madison Plain at Dg 5

PASTE:

Method of Manufacture: Same as Madison Cord Impressed.

Tempering: Same as Madison Cord Impressed.

Texture: Compact.

Hardness: 2.5 to 3.5 (Moh's scale).

Color: Same as Madison Cord Impressed.

SURFACE FINISH: Same as Madison Cord Impressed.

DECORATION: This type, for the most part, has no exterior decoration (8 sherds which may represent as many as 6 vessels). The one sherd which may be an exception to the rule of no decoration, bears a single circular punctate 16 mm. below the lip (Plate 9, Number 10). It is quite possible that this perforation was made to repair a fire-cracked vessel rather than for decorative purposes. These sherds at the Horicon site usually always lack interior decoration of any kind. The only sherd deviating from this generalization has diagonal cord impressions on the interior of the rim.

FORM: Lip: Flat or slightly rounded.

Rim: Essentially straight-sided; only one sherd shows outflaring while two show thinning as the lip is approached.

Body: Probably a round-bottomed globular jar.

Dimensions: The rims varied in thickness from 3 to 7 mm. but most were between 4 and 6 mm.. The average was 5.1 mm..

Category A at Dg 5

PASTE:

Method of Manufacture: Probably the paddle and anvil technique was used.

Tempering: Fine crushed grit, few particles exceed 2 mm..

Hardness: 2 to 3 (Moh's scale).

Color: Orange to dark brown, smoke blackened areas are common.

SURFACE FINISH: Smooth except for a few small areas where the cord marks had not been completely obliterated.

DECORATION: The decorated area is usually limited to the lip and rim of the vessels (7 sherds representing 5 vessels). Two of the vessels had no decoration. On two others the lip was impressed with a smooth stick held at a right angle to the circumference forming a horizontal scallop. The last vessel was decorated with a row (or rows) of blunt stick punctates which started about 21 mm. below the lip. The punctates were about 5 mm. in diameter (Plate 9, Numbers 16, 17, 18).

FORM: Lip: The majority were gently rounded; only one was flat.

Rim: Essentially vertical.

Body: Unknown.

Dimensions: Thickness of rim sherds varied from 5 to 10 mm. with an average of 7.3 mm..

Decorated Sherds at Dg 5

The number of decorated body sherds at this site was fairly small. In general, the same decorational variations found at Dg 2 occurred here although there was some difference in the frequency of different types. There were more sherds, proportionately, of the parallel cord impressed and cord-wrapped stick impressed, but the significance of this difference is not known. Information on the decorated body sherds is presented in tabular form (Table 5), but since most of the sherds were surface collected, they are not tabulated by levels.

Other Pottery at Dg 5

Two sherds of Dane Incised pottery were found at Dg 5. These bore the characteristic decoration of parallel lines over

a cord roughened surface, but because of the small number of sherds found, this type is not considered significant at this site.

Another type of sherd found at this site had been smoothed on the exterior surface and rocker stamp impressions had been applied in the Hopewellian fashion. These impressions formed a decorated rectangular area on the sherd which was bordered on both sides by smooth areas. Another series of impressions was present on one side, but unfortunately the exact extent of this decoration cannot be determined because the sherd fractured at that point and only the edge of these impressions mark the area where the next row would have been (Plate 9, Number 15).

Three other sherds show an attempt at rocker impressions, but these are not applied as neatly, and the sherds on which they occur have a soft sandy surface. Moreover, there is no discernable pattern to the rocker impressions which simply occur at random.

DECORATED BODY SHERDS AT Dg 5

1. Type 1. Parallel cord impressions.
2. Type 2. Cord impressions bordered by punctates.
3. Type 3. Rows of "knot-type" punctates.
4. Type 4. Hemi-conical punctates (hollow rod held at an angle).
5. Type 5. Cord-wrapped stick impressions.
6. Type 6. Incised lines over cord roughened surface (Dane incised).

	2	3	4	5	6	7	8	9	10	*	Totals	(mm.)
Type 1			5	8	9	2				5	29	
Type 2			3	4	1	1				1	10	
Type 3			1	2	1	4	1				9	
Type 4									1		1	
Type 5					1	1					2	
Type 6										2	2	

* Exfoliated

Note: Since most of these sherds are surface finds, none have been listed by level of occurrence.

TABLE 5

Summary (Dg 5)

From the cultural material found at the Horicon site several conclusions can be drawn. First, it seems quite probable that the site was occupied for only a relatively short period of time. Whether this could be figured as one visit of a couple months duration, or several short visits of a week or

so is, of course, unknown. That this site was occupied for a relatively short time is attested by several factors. One of these is the small number of primary flakes excavated from the site; only 41 were found which is a very small number indeed, when compared to the 400-plus figure for the number of potsherds. This figure is also very low when compared to the number of flakes found at village sites or other campsites. If nothing else, these data certainly indicate that very few flint implements were manufactured here.

While sherds were quite numerous at the site, this does not necessarily imply either a large population or a long stay because it would not require many broken vessels to provide the number of sherds found.

Another factor which implies a short stay by the same, or similar group of people, is the uniformity of the ceramic variants found at this site. In addition, it should be noted that here, in contradistinction to the situation at Dg 2, all of the sherds, with but one exception, had extremely simplified decorative motifs, which might well indicate that this site is earlier in time than Dg 2. The presence of the Hopewellian sherd (and several other sherds similarly decorated) could also be of considerable significance to the dating of this site. Hopewellian sherds have been found at several other sites which also contain the Madison Cord Impressed pottery types. The sherds bearing the crude rocker impressions could well be an attempt to duplicate a trade vessel that was highly valued. This interpretation is reinforced by the fact that the curvature of some of the sherds is such that they must have been miniature vessels, since the diameter of the vessel could not be more than three or four inches if the curve represented by the sherds is followed through. If the Hopewellian sherd does represent a trade item or influence by a different group, it would be most helpful in establishing a relative date for the occupation of the site. Hopewellian variants are considered to be Middle Woodland in time which on the basis of present knowledge would place these materials somewhere around 900 years ago (1051 + or − 300 A. D.) according to radiocarbon dates for charcoal obtained from a conical mound at Effigy Mounds National Monument, near McGregor, Iowa

(Griffin, 1952, page 397). This mound contained materials very similar to Illinois Hopewell and may represent a contact situation. It is quite likely that this date represents a terminal date for the Wisconsin Hopewell, but the Effigy Mound Culture probably persists to a later time period.

Projectile points at this site are primarily of the triangular variety and these again seem to be associated with the Effigy Mound pottery types, as does the single Monona Stemmed specimen. The tanged point was found some distance from the site and should not be considered associated with the other materials.

The Horicon site then is quite similar to the Hahn site; the pottery is almost indistinguishable and the same projectile point types are represented at each site. There are differences between the two sites, but these are discussed in the final section. The two sites are separated geographically by thirty miles; how far they are separated in time is another matter. It is the writer's opinion that the difference in time is not too great and that of the two, the Horicon site is the earlier.

Summary and Conclusions

The data thus far presented suggests a number of similarities between the sites Dg 2 and Dg 5. There it little doubt that Dg 5 was a campsite and it seems likely that this was also the case at Dg 2. Although here, the abundance and diversity of cultural material, in comparison to Dg 5, indicates that the site had either an occupation of a more permanent nature, which may imply a village, or that it was frequently revisited over a considerable span of time. Absence of permanent dwellings lends some credence to the latter possibility. Rowe has suggested (1956, pp. 52 and 89) that the peoples involved were primarily hunters and gatherers — a subsistance method which requires, at least in the Wisconsin area, a semi-nomadic way of life. By inference this would mean that permanent villages were not used by these groups.

Another site which has yielded materials directly comparable to those found at Dg 2 and Dg 5 is the Blackhawk Village site, Da 5, (Baerreis, 1953, pp. 5-20). One distinctive feature of this site which may validate the usage of the term, village, was a number of small pits varying in diameter from

eighteen to thirty inches and in depth from nine to twelve inches. "The pit fill contained sherds, flint chips, fire cracked rock and animal bones (mammal, fish and perhaps bird bones). The function of the pits was not clear, but they did appear to have been filled with a more abundant refuse bearing deposit than the overlying soil." (**Ibid.** p. 9). Elsewhere, pits of this kind are considered to have been used for storage purposes. Whether these pits can accurately be used as a criterion to distinguish village from camp sites is an open question, but the absence of any other reported Woodland village implies one of two possibilities. Either the houses constructed within the village were so flimsy as to leave no trace in the soil, or there were no Woodland villages in the Wisconsin area. It is the writer's opinion that there were Woodland houses, but these were probably of pole and mat construction similar to those made by the historic Chippewa. Poles about an inch in diameter are pushed a few inches into the ground, and the opposite ends tied to form a conical framework over which mats are secured. A structure of this type would be unlikely to leave molds and it would be the rarest of good fortune should evidence of such a structure ever be uncovered.

On the basis of evidence likely to be encountered in this region, pits, such as those described by Baerreis, are perhaps the best indicators of a village site. Certainly the presence of storage pits implies an occupation of a more permanent nature than the term, camp, would indicate.

Cultural materials obtained from the site are most significant in attempting to illustrate the cultural affiliation and relationship of Da 5 to the other two sites. Quantitatively, the amount of material recovered is noteworthy, particularly in view of the short excavation period. Since this site (Da 5) had been selected as a housing project, the excavation was primarily a salvage operation but unfortunately, the day after excavation had begun, half the site had been removed and the other half had been covered with several feet of fill by the earth moving machinery. As a result, further excavation was impossible and the sample is limited to what was obtained the first day and such surface collections as could be made. In all, some 316 sherds, 8 chert artifacts, 115 primary flakes

and a considerable quantity of bone refuse were available for laboratory analysis. The ceramics present at this site are most useful in establishing its relationship to the two sites in Dodge County.

As is to be expected, the preponderant number of sherds came from the body section of the vessels, but 17 rim sherds were present in the assemblage. The dominant pottery type at this site was Madison Cord Impressed and while the sherds fall well within the category as previously described in this report, most of the sherds are characterized by simple decorative motifs similar to those encountered at Dg 5 and contrasting sharply with the relatively complicated decorations exhibited by many of the sherds from Dg 2. Horizontal bands of parallel cord impressions constitute the primary decorative motif and of the 14 Madison Cord Impressed sherds present at the site, 12 bore these horizontal cord impressions on the exterior. "These are found with variable spacing but generally 3 to 5 mm. apart and they form a solid band from the lip to 1.5 to 2.0 cm. below the lip. The lower margin may be bordered by short vertical impressions. A variant of this decoration is found on a sherd having paired, horizontal rows of cord imprints spaced 5 mm. apart. Another variant represented by a rim sherd lacking the lip area is one which bears a series of horizontal lines interspersed with short vertical elements. A less common decoration (2 rim sherds) consists of a series of short, horizontal impressions (1 cm. wide) arranged in a vertical band 3 cm. long. Vertical or diagonal cord impressions on the interior are common and were found on ten of the fourteen rim sherds." (**Ibid.** pp. 13-15.)

The fact that these simply-decorated sherds are of common occurrence at Da 5 but quite rare at the Hahn site may be due to an actual difference or it may be due to the small sample size at the Blackhawk site. However, the similarity in ceramic decorations to those of the Horicon site suggests that sample size does not account for the difference. The Blackhawk site also differs from the Hahn site in that Hahn Cord Impressed pottery is absent. Madison Plain, which is common at both the Hahn and Horicon sites, was not reported as occurring at Da 5, but Baerreis did describe three sherds

which were not classified.

"One small rim fragment is a thin ware (5 mm. thick) with a slightly flattened lip and evidently a vertical rim. the exterior is cord roughened. The surface color is a light brown. The characteristics suggest Madison Cord Impressed but the distinctive decoration of this type is lacking. A second rim sherd is somewhat thicker (7 mm.). The nearly vertical rim has a flattened lip. The lip and interior is smoothed and the exterior bears vertical cord roughening. The exterior color is a reddish brown gradually changing to a gray core and interior. The ware is compact though with a slight tendency to exfoliate on the inner surface. The third rim sherd has generally similar characteristics in rim and lip form though the color is darker. The sherd is thicker (9 mm.) but this may be due to the fact that 13 mm. below the lip is a series of bosses punched from the exterior to the interior of the vessel." (**Ibid.** page 16.)

From this description there can be little doubt that these sherds can be readily assigned to the Madison Plain type of pottery as described for Dg 2 and Dg 5.

Still another type of pottery found at Da 5 seems to relate this site more closely to Dg 5 than Dg 2. These are sherds of the Hopewellian type, five of which were found at Da 5. Three are decorated by dentate rocker impressions and two bear a straight dentate stamp although on one specimen it had largely been obliterated by smoothing.

"The Hopewell sherds are slightly thicker than the sherds of Madison Cord Impressed variety. The average wall thickness is 7.1 mm. Surface colors tend to be somewhat lighter, a yellow brown predominating. The exterior color gradually changes to black in the core and the interior is also black. Surface texture is sandy and the temper is a crushed grit. Exterior and interior surfaces are smoothed, except where dentate stamping or dentate rocker impressions have been applied." (**Ibid.** page 16).

It should be noted that although Hopewellian sherds occur at both Da 5 and Dg 5, the types present at each of these sites vary somewhat in decoration. At Da 5 all of the sherds have dentate impressions (either straight or rocker) while those from Dg 5 have solid-line rocker impressions. What meaning this has in terms of cultural relationship between the

two sites is difficult to understand, because the relationship of Hopewellian to other forms of Woodland culture has not yet been clarified to the satisfaction of students working with this problem. It is possible that the slightly different types of decoration are indicative of a temporal difference, but so far little work along these lines has been done.

Baerreis, in summarizing the data from the Blackhawk site, concludes that, "It seems reasonable to assume that we are dealing with a rather homogeneous assemblage resulting from the occupation of the site by a single people for a short period of time." (**Ibid.** pages 17-18.) Although he suggests that the triangular point should be excluded because it is more typical of later time period, the association of these points with similar ceramic wares at several sites conclusively indicates that the point type should definitely be included with the assemblage which includes Madison Cord Impressed pottery types.

In a further consideration of the ceramic analysis, Baerreis states, "The fact that nearly all of the pottery consists of a single type would appear to bear out the suggestion mentioned above, that the component represents a period of short temporal duration. That being the case, the trade pottery — for the Hopewellian sherds are doubtless trade pieces — provides us with a means of fixing the complex in time. Clearly the village site is to be assigned to the Middle Woodland Period on the basis of the trade sherds. However, this period is doubtless of considerable duration and it would be desireable to determine whether it is early or late in that period." (**Ibid.** pages 18-19). It is believed that the data made available by the excavation of the two sites reported in this paper are of considerable value in determining the period of occupation within the Middle Woodland Period and is discussed at length later. With reference to Hopewellian manifestations, it is of some significance that mound 43 of the Sny-Magill group, which is located about six miles south of McGregor, Iowa, has yielded sherds of a vessel showing both Madison Cord Impressed and Hopewellian decoration.

"The surface of the vessel had been smoothed before receiving a series of vertical rocker impressions on the

shoulder and body region. A variation in the intervals between the teeth at the center of the rocker stamp produced a smooth horizontal band across the series of imprints. The rim had been thinned at the rounded lip. Between the lip and a band of horizontal twisted-cord imprints encircling the neck was a decoration of twisted cord imprints arranged to form a series of continuous chevrons. The encircling band of cord-impressed decoration near the rim indicates a close relationship with one of the Effigy Mound pottery types included in 'Lake Michigan' ware, which Baerreis (n. d.) has recently designated as Madison Cord Imprinted (later changed to Madison Cord Impressed). In northeast Iowa the use of a rocker dentate stamp is regarded as a Hopewellian trait, so the combination of rouletted decoration and the encircling string impressions suggests a blending of cultural influences. In any event the occurrence of these sherds in the fill indicates that the mound was completed after both Hopewellian and Effigy Mound influences had appeared in the region." (Beaubien, 1953b, pages 59-60.)

The dentate rocker-stamped pottery is most similar to the style found at Da 5 and if this pottery type does have any significance as a time marker, then mound 43 would be closer to Da 5 than Dg 5. Unfortunately no dateable material was found in this mound, though a radiocarbon date has been obtained for mound 33 of the Sny-Magill group. There is of course no evidence to indicate that these mounds were constructed at the same time period but on the basis of the mound contents, both mounds have been interpreted as being representative of the late Hopewellian Period. The date of 1750 + or − 300 years (206 + or − 300 A. D.) is somewhat earlier than others obtained from this area (Crane, 1956, page 667), although it is well within the range previously established for Hopewell.

Material obtained from a similar site (Effigy Mounds National Monument) located only ten miles north of the Sny-Magill mound group has yielded a radiocarbon date of 930 + or − 300 years B. P. (1021 + or − 300 A. D.) for a bear effigy mound, (Griffin, 1952, page 367). This date is very close to that obtained from a conical mound at the same site (900 + or − 300 years B. P.), but it should be noted that this mound contained only Hopewellian materials.

It has frequently been pointed out that Hopewellian artifacts have been found in contexts extending over a long period of time with dates for the Ohio and Illinois areas, ranging from 1951 + or − 200 to 2336 + or − 250 years B. P., (Johnson, 1951, page 6). In the northern Mississippi Valley there is ample evidence indicating the terminal date was much later, perhaps even later than the 900 B. P. figure from mound 27 at Effigy Mound National Monument. Of course not all sites with Hopewellian pottery contain the Effigy Mound ceramic variants described in this paper, but the fact that associations of this type are not infrequent at least places the cultural assemblage within a limited range of time.

Fortunately, the temporal assignment of these Effigy Mound ceramic variants is not entirely dependent on dates obtained for similar sites in nearby states. Recent excavations at the Kolterman Mound group (Horicon Marsh, Dodge County, Wisconsin) have provided considerable data relevant to this problem (Wittry and Bruder, 1955). Two otter effigy mounds were excavated and one yielded cultural materials similar to the Effigy Mound campsites under discussion. The excavators were extremely fortunate in locating a charcoal sample directly associated with sherds of a crushed pottery vessel and two projectile points. These artifacts had apparently been placed with a cremation before the fire was ignited (**Ibid.** page 5). The two projectile points were of quartzite and chert and varied in length from 2⅞ to 1-13/16 inches respectively. Both were triangular in outline and while one had straight edges, the other had slightly convex edges. The base of the complete point was concave and it is quite possible that the broken point had the same type of base. These points are similar to the triangular variants found at the other Effigy Mound sites, although the difference in basal form is a distinguishing charasteristic. The restored vessel is of the Madison Cord Impressed type, and in form, decoration, etc. is quite similar to the vessel illustrated in plate 10 of this report.

This site has yielded additional evidence of the association of the triangular points and Effigy Mound pottery, but perhaps the most significant aspect is the fact that a radiocar-

PLATE 10

EXPLANATION OF PLATE 10

Reconstructed Madison Cord Impressed vessel excavated at Dg 2

bon date was obtained from the sample of charred wood. The sample, tested by H. R. Crane of the University of Michigan Memorial-Phoenix Project, Radiocarbon Laboratory, has provided a date of 1180 + or − 250 years ago (776 + or − 250 A. D.) which is within 250 years of the date of 930 + or − 300 years B. P. obtained from the Effigy Mounds National Monument near McGregor, Iowa (Wittry, 1956). When the plus or minus figures are taken into consideration, a definite overlap between the dates is indicated. Although other Effigy Mound material was obtained from some of the other mounds, it is considered advisable to confine the discussion of materials to those camps or mounds where the specific types of pottery under discussion were actually found. To do otherwise would simply confuse the establishment of a temporal sequence. Moreover, it is the author's opinion that since most of the dates obtained on these associations are around 900 A. D., this date represents a time period when the Madison Cord Impressed pottery types had already been well established. How much earlier they might have begun cannot even be speculated upon at the present time.

If the association of Upper Mississippi pottery and the Effigy Mound types at Dg 2 represents, as the writer suggests, contact or influence between those two groups, the terminal date for this culture might well be in the vicinity of 1200 to 1300 A. D., or possibly later. This late date is partially corroborated by two other traits long considered as diagnostic of the Late Woodland Period. First, there is the angular-cornered rim sherd found at Dg 2 and while it is somewhat thinner, it is typologically comparable to the Woodland sherds found at Aztalan. It should also be noted that Hahn Cord Impressed pottery is confined, except for the one sherd found at Dg 5, to the Hahn site. The diagnostic criterion of this pottery type is the addition of fillets or collars, another ceramic characteristic usually considered quite recent in this area. All in all, the number of these characteristics lends credence to the assignment of Dg 2 to a later time period than either Da or Dg 5.

In attempting to analyze the significance of the projectile points associated with the Effigy Mound pottery many prob-

lems have arisen to complicate the situation. First, the only site with any sort of stratigraphic picture is Dg 2; here no triangular variants were found below level II, while Monona Stemmed points were quite numerous in the lower levels and gradually decreased in number until they were barely represented in the uppermost level. There is no question that the triangular points are late at this site. However it is difficult to relate this information to the situation at Dg 5 where most of the points were surface collected. More than this, the most common triangular point at this site is a variant with convex sides and base which is a type represented by only one example at Dg 2 and none at Da 5. If one could safely assume that the point from Dg 2 belongs in level II where it was found, a neat, sequential picture of the points could be postulated: Monona Stemmed being the earliest (level III), the convex-based triangular point is introduced (level II), and is finally replaced by the straight-sided and straight-based triangular point (level I). However, such conclusions based on this sort of evidence would be completely untenable. Yet, there is a distinct possibility that this sequnece of points might be the actual situation, but of course based on other evidence.

Mississippi pottery is present at Dg 2 as well as the Mississsippi-like triangular points, but no pottery of this type, and only one projectile point like this was found at Dg 5. On the other hand, Hopewellian pottery was found at Dg 5 but not at Dg 2, therefore it should follow that Dg 5 is earlier in time than Dg 2 and thus the convex-sided and convex-based points should also be earlier.

The situation at Da 5 is difficult to understand because of the paucity of projectile points found (three Monona Stemmed and one straight-based triangular). It has been suggested that points are more likely to be picked up by collectors than is pottery (Baerreis, 1953), so the small number probably does not represent even the correct percentage of lithic materials, let alone the various point types. For this reason, projectile points are of little use in attempting to establish the temporal position of Da 5 in relation to Dg 5. However, the absence of Mississippi pottery at this site implies that it should be earlier than Dg 2.

In attempting to determine the relative relationship of the sites in question, a method of comparing the mean thickness of pottery types was devised which has the advantage of taking into account the variation in sample size at the three sites. This analysis was confined to body sherds and is based on the hypothesis that these sherds should show a certain uniformity in thickness if they were made by a group with common cultural standards. The chart (Table 6) indicates the mean thickness of the smooth-surfaced and cord roughened sherds as they occurred at the three sites. It is readily apparent that differences between means was not too great as long as the same type of body sherds from the different sites were being compared. However, the smooth sherds at all sites tend to be comparably thicker than either the cord roughened or Mississippi sherds.

To find out if the differences in means between the same pottery types at different sites were significant, the critical ratios (C. R.) were computed. This is a method of testing the difference between two matched samples. A critical ratio of less than 2.0 indicates that the difference between the means is not significant; i. e, the two means could well have come from the same universe (McCormick, 1941). Table 7 illustrates the results of these computations.

The critical ratios of the cord roughened pottery show that Da 5 is significantly different from both Dg 5 and Dg 2, while these latter, when compared, have a very low C. R. The computed critical ratios for the smooth sherds show that very little difference exists between the means of the three sites and that statistically they could be considered as representative of the same universe, or as applied here, cultural tradition. Part of the problem concerning the use of these methods still remains. The universe is unknown and there are, of course, physical limitations on the variations in thickness that can be used and still produce functional pottery. One way of testing this method would be to utilize material from several sites where the Madison Cord Impressed types of pottery do not occur and check the results with materials from sites containing the Madison Cord Impressed variants. Since not many site reports present the type of data that

would allow this, two samples of cord roughened, grit-tempered sherds from Aztalan were analyzed and the data computed.

Mean	Sample Size	Sample Number
6.74	500	1
6.87	500	2

C. R. of Samples 1 and 2 — 1:18

TABLE 6

AVERGAGE THICKNESS OF BODY SHERDS

Mean Thickness	Sample Size	Type	Site
7:33 mm.	52	Smooth Surfaced	Dg 2
6.73 mm.	26	Smooth Surfaced	Da 5
7.25 mm.	32	Smooth Surfaced	Dg 5
5.52 mm.	469	Cord Roughened	Dg 2
5.14 mm.	254	Cord Roughened	Da 5
5.49 mm.	590	Cord Roughened	Dg 5
5.05 mm.	217	Mississippi	Dg 2

TABLE 7

CRITICAL RATIOS OF MEAN THICKNESS

C. R. 3.163 — Dg 2 and Da 5 Cord Roughened
C. R. 0.297 — Dg 5 and Dg 2 Cord Roughened
C. R. 3.300 — Dg 5 and Da 5 Cord Roughened
C. R. 1.122 — Dg 5 and Da 5 Smooth Surfaced
C. R. 0.202 — Dg 5 and Dg 2 Smooth Surfaced
C. R. 1.58 — Da 5 and Dg 2 Smooth Surfaced

The critical ratio indictes that there is no significant difference between these samples. Yet there would be a significant difference between these samples and any of the grit-tempered, cord roughened sherds from the three sites discussed in this report. This tends to partially validate the use of this method as an analytic tool, although the accuracy cannot be completely verified until more work with known samples is done.

The difference between the means of the smooth-surfaced and cord roughened sherds also appears to be significant. The difference in mean thickness varies from a maximum of 2.19 mm. to a minimum of 1.21 mm. Exactly what this difference means is not known at the present time. It is quite possible that the difference means the smooth sherds represent the thicker basal sherds, for at each site the variation of the two sherd types (cord roughened and smooth) is relatively constant.

The fact that Da 5 differs most markedly from the other

sites in the mean thickness of pottery sherds is perhaps to be expected since this site differs in a number of other ways. It has the smallest number of pottery types, the simplest forms of decorative motifs and the fewest variations of these motifs. Even though this site has the smallest sample of pottery, it is doubtful that this factor alone could account for the difference. Therefore it is suggested that these differences in site materials are due to a time difference. Since it has already been indicated that Da 5 was most closely related to Dg 5, the only problem remaining is whether the former site is earlier or later in time. For all that the evidence is not conclusive, it is the author's opinion that because of the lack of complexity of any sort at Da 5, that this site does precede Dg 5 in time and Dg 2 is the most recent of the three sites.

As stated in an earlier section, part of the problem under consideration was the establishment of a complex within the Effigy Mound culture as a preliminary step toward a more meaningful breakdown of this culture into segments illustrative of the temporal sequence. Although some data have been presented here which could be used for the purpose, it is felt that rather than spawn a poorly defined complex, it is best to wait until more information is available.

Even so, several facts have been developed in this paper. First, it has been conclusively demonstrated that Madison Cord Impressed pottery is definitely associated with Effigy Mound culture. The occurrence of Madison Cord Impressed pottery and triangular points in Mound 18 of the Kolterman group is the best evidence, but the conical mounds of the Sny-McGill and Effigy Mounds National Monument groups are also indicative of this fact. It is suggested, although not completely verified, that Madison Plain and Hahn Cord Impressed pottery types are also part of this culture. A vessel of the Madison Plain type was excavated from a conical mound near Fox Lake in Dodge County, Wisconsin (Ritzenthaler, 1954, pages 54-55). Although it is not stated whether this mound was part of a group or not, there are few Effigy Mound groups that lack conical mounds so it is suspected

that this mound had been constructed by Effigy Mound peoples.

There can be little doubt that the triangular points are associated with these forms of pottery. To be sure, there are variations in form which have not been satisfactorily equated with the temporal sequence, but the association of triangular points and the Madison Cord Impressed pottery types appears to be a rather widespread characteristic.

Finally, it should be noted that we are not only working with Effigy Mound culture, but with at least two time levels within this culture which are defined on the basis of sequential arrangement of cultural materials. The association of Hopewellian materials (or Hopewellian influence) has occurred far too often to be dismissed as intrusive, therefore it is quite likely that the Blackhawk and Horicon sites are Middle Woodland in time and the radiocarbon date of 900 + or − 300 B. P., in all probability, accurately expresses the range in time for these sites. The Hahn site, on the other hand, is completely lacking in Hopewellian material but does have more recent associations which include the angular-cornered rim sherd, Mississippi-like projectile points, Oneota (or Oneota-like) pottery, and Hahn Cord Impressed pottery, which has ceramic characteristics of the Late Woodland Period. An estimate for this site places it about 12-1300 A. D.

It might be mentioned here that at the Dietz site (Dietz, Baerreis, Nero, Cutler, 1956, pages 14-17), there seemed to be a tendency for the ceramics to be moving away from the Madison Cord Impressed types toward the type found at Aztalan, a situation directly comparable to that at Dg 2. The suggested date for this period at the Dietz site is about 1250 A. D., which is very close to the estimate for the Hahn site.

This report is concluded with the hope that the data and techniques presented here are a contribution, minor as it may be, to the clarification of the Effigy Mound culture and will be of use to other students working on this problem.

BIBLIOGRAPHY

BAERREIS, DAVID A.
1953 "The Blackhawk Village Site, (Da 5) Dane County, Wisconsin." **Journal of the Iowa Archeological Society,** Volume 2, Number 4, pp. 5-20, McGregor, Iowa.
1946 "Some Comments on the Trait Lists and the Hopewellian Culture." **The Wisconsin Archeologist,** Volume 30, Number 4, pp. 65-73.

BARRETT, S. A.
1933 "Ancient Aztalan." **Bulletin of the Public Museum of Milwaukee,** Volume 13.

BEAUBIEN, PAUL L.
1953a "Some Hopewellian Mounds at Effigy Mounds National Monument, Iowa." **Wisconsin Archeologist,** Volume 34, Number 2, pp. 125-138.
1955b "Cultural Variation within Two Woodland Mound Groups. of Northeastern Iowa." **American Antiquity,** Volume 19, Number 1, pp. 55-66.

BENNETT, JOHN W.
1952 "The Prehistory of the Northern Mississippi Valley." In Griffin, 1952, pp. 108-123.

BERSING, OTIS S.
1956 **A Century of Wisconsin Deer.** Madison.

BRUDER, E. G.
1953 "Archeological Remains in Northeastern Dodge County." **The Wisconsin Archeologist,** Volume 34, Number 4.

CRANE, H. R.
1956 "University of Michigan Radiocarbon Dates I." **Science,** Volume 124, Number 3224, pp. 664-672.

DIETZ, E. F., BAERREIS, D. A., NERO, R., CUTLER, H. C.
1956 "A Report on the Dietz Site (Da 12), Dane County, Wisconsin." **The Wisconsin Archeologst,** Volume 37, Number 1, pp. 1-19.

GRIFFIN, JAMES B.
1952 **Archeology of Eastern United States.** University of Chicago Press.
1946 "Culture Change and continuity in Eastern United States Archeology." In Man in Northeastern North America (Frederick Johnson, Ed.) **Papers of the Robert S. Peabody Foundation for Archeology,** Volume 3, pp. 37-95, Andover.

HALL, ROBERT L.
1950 "A Style Analysis of Woodland Pottery." **The Wisconsin Archeologist,** Volume 31, Number 1, pp. 1-42.

JOHNSON, FREDERICK
1951 "Radiocarbon Dating." **Memoir of the Society for American Archeology,** Number 8.

KRIEGER, ALEX D.
1944 "The Typological Concept." **American Antiquity,** Volume 9, Number 3, pp. 271-288.

MAXWELL, MOREAU S.
1952 "The Archeology of the Lower Ohio Valley." In Griffin, 1952, pp. 176-189.
1950 "A Change in the Interpretation of Wisconsin's Prehistory." **Wisconsin Magazine of History,** Volume 33, Number 4, Madison.

McCORMICK, THOMAS C.
1941 **Elementary Social Statistics,** York, Pennsylvania.

McKERN, W. C.
1945 "Preliminary Report on the Upper Mississippi Phase in Wisconsin." **Bulletin of the Public Museum of Milwaukee,** Volume 16, Number 3.
1930 "The Kletzien and Nitschke Mound Groups." **Bulletin of the Public Museum of Milwaukee,** Volume 3, Number 4..
1928 **"The Neale and McClaughry Mound Groups."** Bulletin of the Public Museum of Milwaukee.

McKERN, W. C. and RITZENTHALER, R. E.
1949 "Trait Lists of the Effigy Mound Aspect." **The Wisconsin Archeologist,** Volume 30, Number 2.

PHILLIPS, PHILIP ,FORD, J. A., and GRIFFIN, J. B.
1951 "Archeological Survey in the Lower Mississippi Alluvial Valley. 1940-1947." **Papers of the Peabody Museum of American Archaeology and Ethnology,** Harvard University, Volume XXV.

RITZENTHALER, ROBERT E.
1954 "A Woodland Pot from Dodge County." **The Wisconsin Archeologist,** Volume 35, Number 2, pp. 54-55.
1952 "Similarities Between Copper Pendants from Wisconsin and Georgia." **The Wisconsin Archeologist,** Volume 33, Number 4, pp. 225-228.

ROWE, CHANDLER W.
1956 "The Effigy Mound Culture." **Milwaukee Public Museum Publications in Anthropology,** Number 3.

VON EICKSTEDT, EGON
1934 **Rasskunde und Rassengeschichte der Menschheit.** Stuttgart.

WILFORD, LLOYD A.
1955 "A Revised Classification of the Prehistoric Cultures of Minnesota." **American Antiquity,** Volume XXI, Number 2, pp. 130-142.

WITTRY, WARREN L.
1956 "Kolterman Mound 18 Radiocarbon Date." **The Wisconsin Archeologist,** Volume 37, Number 4, pp. 133-134.

WITTRY, WARREN L. and BRUDER, E. G.
1955 "Salvage Operations at the Kolterman Mound Group, Dodge County." **The Wisconsin Archeologist,** Volume 36, Number 1, pp. 3-11.

Interesting Wisconsin Specimens

COPPER NECKLACE

Twenty-six rolled copper beads of the type associated with the Old Copper and Red Ochre Culture in Wisconsin. This group was found in Waupaca County and is in the Bruder collection.

COPPER HARPOON

A single barbed harpoon with a length of 12½ inches. The culture is Old Copper. This specimen was found on the Pigeon River, Waupaca County, and is now in the Bruder collection.

Dr. Robert Ritzenthaler, our regular editor, left during the first part of November for field research in West Africa. He is not expected to return until June or July of 1959. In the meantime all editorial matters can be sent to Arthur Niehoff, Milwaukee Public Museum, Milwaukee, Wisconsin.

Though with the retirement of W. C. McKern from the directorship of the Milwaukee Public Museum our Society has lost one of the foremost midwestern archeologists, we are fortunate that we can welcome another noted archeologist in his place. The new director of the Milwaukee Public Museum will be Dr. Stephan de Borhegyi, anthropologist, and former director of the Stovall Museum of Oklahoma. Dr. Borheygi has been active in archeology for many years, doing archeological field work in Europe, Mexico, Guatemala and New Mexico. Most recently he has been directing underwater excavations of Mayan sites in Guatemala. Dr. Borhegyi will assume his directorship duties in Milwaukee in February 1959.

The Charles E. Brown Chapter of the Wisconsin Archeological Society has sent in its report for its sixth year, the academic year of 1957-1958. Officers were Mr. William Curkeet, President, Miss Joan Freeman, Secretary, and Dr. Warren L. Wittry, Treasurer. The total membership for the year was 41 and attendance at the meetings averaged 28 persons. Eight programs were held throughout the year when talks on archeology and ethnological subjects were given.

The following new members are welcomed into the Society:

Buck, Jr., A. D., Department of Anthropology, University of Wisconsin, Madison, Wis.

Fecht, Wm. G., 204 East Fourth St., Alton, Ill.

Fish, Richard, Rte 1, Box 412, Burlington, Wis.

Flaherty, Jr., Mrs. Edward, 7739 W. Mt. Vernon, Milwaukee 13, Wis.

Hughes, Prof. Paul L., 737 W. Belden Ave., Chicago 14, Ill.
Longacre, Bill, 306 E. Armory, Champaign, Ill.
Miglautsch, Mrs. E. Doris, 2525 E. Bellview Ave., Milwaukee 11, Wis.
Moore, Harry Stewart, 4792 N. Cramer St., Milwaukee 11, Wis.
Williams, Wm. Harley, 410 Prospect Ave., Waukesha, Wis.
Wilson, Gerald A., 702 Cranston Rd., Beloit, Wis.

Arthur Niehoff
Milwaukee Public Museum

March, 1959 Vol. 40, No. 1

THE WISCONSIN ARCHEOLOGIST

THE PREHISTORIC GARDEN BEDS OF WISCONSIN AND MICHIGAN AND THE FOX INDIANS, George R. Fox 1

SIX MILE CREEK: A NON-POTTERY SITE ON LAKE MENDOTA, Robert F. Maher 19

BEADS FROM A RED OCHRE BURIAL IN OZAUKEE COUNTY, Arthur Niehoff 25

THE COLLECTOR'S CORNER 29

INTERESTING WISCONSIN SPECIMENS 31

Ref

KANSAS CITY, MO
PUBLIC LIBRARY
MAY 15 1959

WISCONSIN ARCHEOLOGICAL SOCIETY

Milwaukee, Wisconsin

Incorporated, 1906

For the purpose of advancing the study and preservation of Wisconsin Indian Antiquities.

OFFICERS

PRESIDENT

P. H. Wiegand

VICE-PRESIDENTS

Laurence Kracht, Dr. D. A. Baerreis, Herman O. Zander, Paul Scholz, Lincoln Smith, Jr.

DIRECTORS

Dr. E. G. Bruder, Kermit Freckman

ADVISORY COUNCIL

Frank Achen, Zida C. Ivey, Arthur W. Quan, Carlos Cortez, Paul Koeppler, Dr. Chandler W. Rowe, William Curkeet, Jr., Mrs. Theo. Koerner, Chas. G. Schoewe, Edward Eichenberger, William Oestreich, Kirk Whaley, Dr. William Godfrey, Neil Ostberg, Dr. A. H. Whiteford, Robert L. Hall, Louis Pierron, Dr. Warren L. Wittry, Dr. Robert Howard, Allen Prill, Lincoln Smith, Sr., Dr. Stephan F. Borhegyi

TREASURER

Martin Greenwald, 4567-A N. 30th S., Milwaukee, Wis.

SECRETARY

Nona Wiegand, 1276 N. 63rd Ct., Wauwatosa 13, Wis.

EDITOR

Dr. Robert Ritzenthaler, Milwaukee Public Museum, Milwaukee 3, Wis.

MEMBERSHIP FEES

The Wisconsin Archeologist is distributed to members as part of their dues.

Life Members, $50.00 **Endowment Members, $500.00**
Sustaining Members, $5.00 **Annual Members, $2.00**
Institutional Members, $2.00

All communications in regard to the Wisconsin Archeological Society and contributions to the Wisconsin Archeologist should be addressed to Phil H. Wiegand, 1276 N. 63rd Ct., Wauwatosa 13, Wis. Entered as Second Class Matter at the Post Office at Lake Mills, Wisconsin under the Act of August 21, 1912. Office of Publication: 204 N. Main St., Lake Mills, Wis.

THE WISCONSIN ARCHEOLOGIST

Published Quarterly by The Wisconsin Archeological Society

New Series

MILWAUKEE, WISCONSIN, MARCH, 1959

THE PREHISTORIC GARDEN BEDS OF WISCONSIN AND MICHIGAN AND THE FOX INDIANS

by

George R. Fox

in collaboration with

Edward J. Wahla and Harold W. Moll

The archaeological features known as "garden beds" comprise a major evidence that certain culturally related peoples once lived in both Wisconsin and Michigan. Available evidence indicates that all known garden beds, excepting one group found by M. W. Sterling in government excavations under a mound at Macon, Georgia, [1] were located in Michigan and Wisconsin.

In the Michigan Archeological Atlas, Dr. W. B. Hinsdale, who presumably uses Schoolcraft as an authority, says that garden beds also were found in Indiana. However, investigation revealed that garden beds were never known in Indiana. Glenn A. Black writes "I do not know of a single specific instance! I have worked in Allen County (Fort Wayne) and St. Joseph County (South Bend) and in 1931 Gilbert MacAllister worked Porter County. I cannot tell you of a site of garden beds in any of the three. In view of what I do know, if I were writing on the subject, I would have to say there are none in Indiana." [2]

The Handbook of American Indians almost ignores garden beds. The article on "Agriculture" [3] makes no mention of such beds. The single instance found is under "Mascoutens." After the Assegun (Sauk) and the Mascoutens "were driven still further southward in the peninsula after which they are

---

1 Smithsonian Report 1934, Plate IV, No. 2.

2 Letter to the writer from Glenn A. Black, July 26, 1957, from Angel Mounds, Indiana.

3 Handbook I, Bureau of American Ethnology, Bull. 30, 1907.

lost in tradition, except that it attributes to them the well known 'garden beds' of Southern Michigan." [4]

Hinsdale writes, "Beds are reported to have been located in several counties (south) from a line running from the southwestern corner of Berrien County to the head of Saginaw Bay." [5] In this area he lists 36 groups. Today, after intensive search, not one bed seems to be left in Michigan, but inquiry among descendants of early settlers have located more sites. Instead of one site for Cass County, as shown by Hinsdale, sixteen sites were located by the writer.

Waterman's History of Cass County says, "When Cass County was first settled, forms of ancient garden bed plats were to be seen upon the several prairies (Cass has twelve, nearly all named) [6] and in the woods. [7]

In Harland Smith's "Archeology of Michigan" are added a few more beds. [8] The Michigan Pioneer and Historical Collections adds one in Eaton County [9] and in the same volume it is stated that near Charlotte ". . . were corn hills in rows overgrown with turf." [10] In an earlier volume another site is mentioned. [11] Garden beds were most numerous in Kalamazoo County, with 22 sites. A few of these have been added to the list since Hinsdale's Archeological Atlas was published. [12]

The total record for Michigan is now fifty-nine. This total does not include the very earliest records. Verandrier, who explored this region of Michigan before 1748, found in the western wilderness "large tracts free from wood, many of which were everywhere covered with furrows, as if they

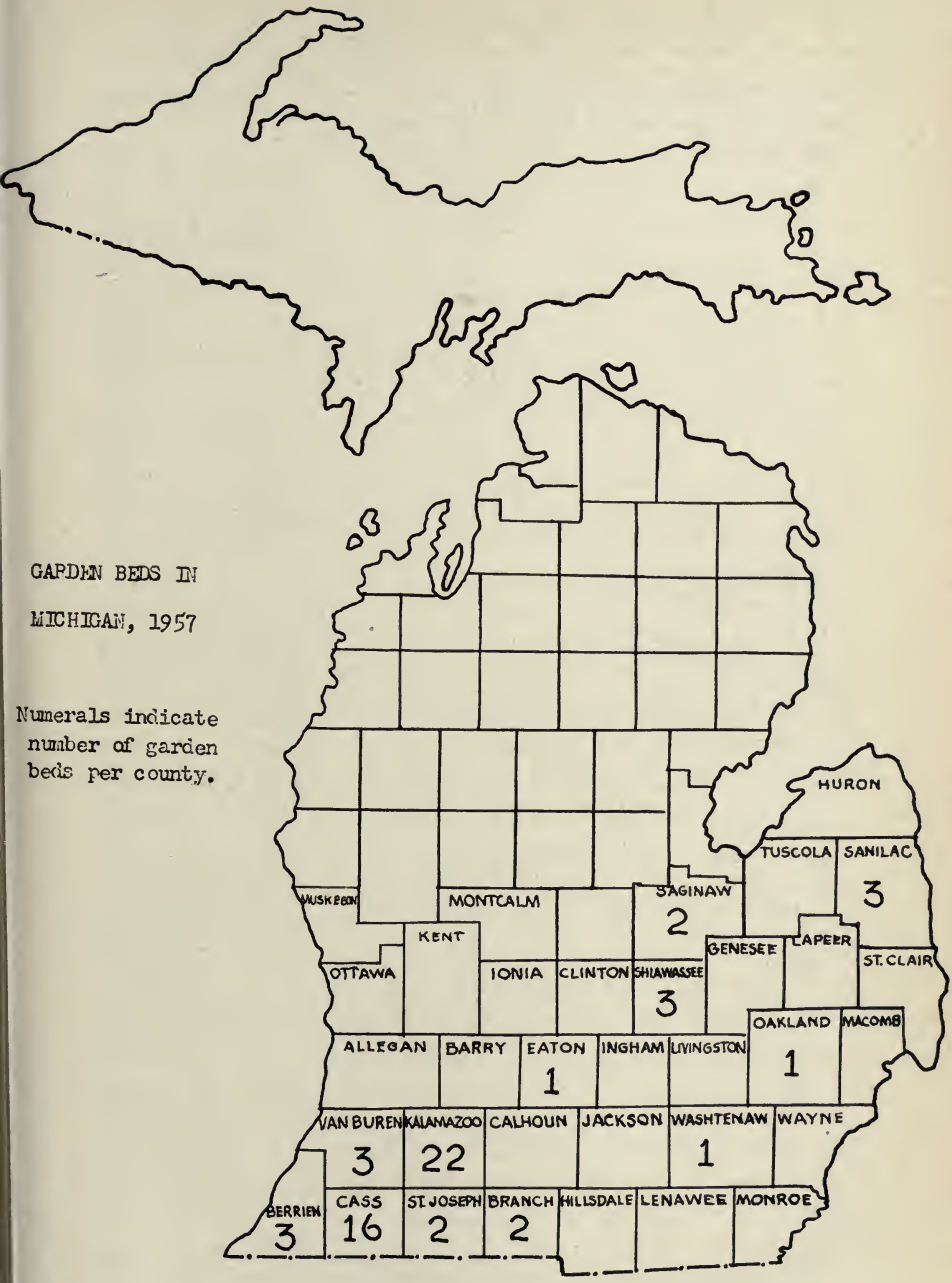
---

4 Handbook I, p. 811, James Mooney and Cyrus Thomas.
5 W. B. Hinsdale "Primitive Man in Michigan," Michigan Handbook Series No. 1 University of Michigan, 1925, p. 58.
6 Map of Cass County, "Soil Survey of Cass County, Michigan" by W. J. Geib, U. S. Department of Agriculture.
7 Waterman's History of Cass County, Chicago, 1882, p. 15.
8 Harlan I. Smith "Preliminary List of the Sites of Aboriginal Remains in Michigan," Michigan Geological and Biological Survey, Publication 1, Biological Series 1, University of Michigan, Lansing, Michigan, 1910, p. 67.
9 Michigan Pioneer and Historical Collections, Vol. 29, p. 342.
10 Michigan Pioneer and Historical Collections, Vol. 29, p. 379.
11 Michigan Pioneer and Historical Collections, Vol. 7, p. 557.
12 Archeological Atlas of Michigan, W. B. Hinsdale. Michigan Handbook Series 4, University of Michigan, p. 67.

GARDEN BEDS IN

MICHIGAN, 1957

Numerals indicate number of garden beds per county.



Map 1. — Garden Beds of Michigan 1957.

formerly had been plowed and sown." [13] Although not called "garden beds," that is what they must have been. As "tracts" were seen, there may have been more than one group. Obviously these were not the customary corn hills.

The garden beds in Michigan are in what seems to be two main groupings: an eastern area with some ten beds reported; and another in the southwestern section, including Kalamazoo and Cass Counties, where at least 38 are known. The records for the Kalamazoo beds, except for a few added recently, are the results of Bela Hubbard's 1877 visit during which he talked with many pioneers, or their descendants, who had seen garden beds. The Cass County beds were recorded in Waterman's History, based on visits to nearly every farm in this county. A close search and inquiry in Michigan probably would result in the finding of more records of such beds.

Using "A Record of Wisconsin Antiquities," 1906, by Charles E. Brown, [14] the six additional records, [15] and county site reports, all from the Wisconsin Archeologist, 121 sites of garden beds are recorded for Wisconsin (See map). A few sites, personally known to the writer, were added. This total is probably too low, as not a few records merely specify "garden beds;" these might include several isolated groups.

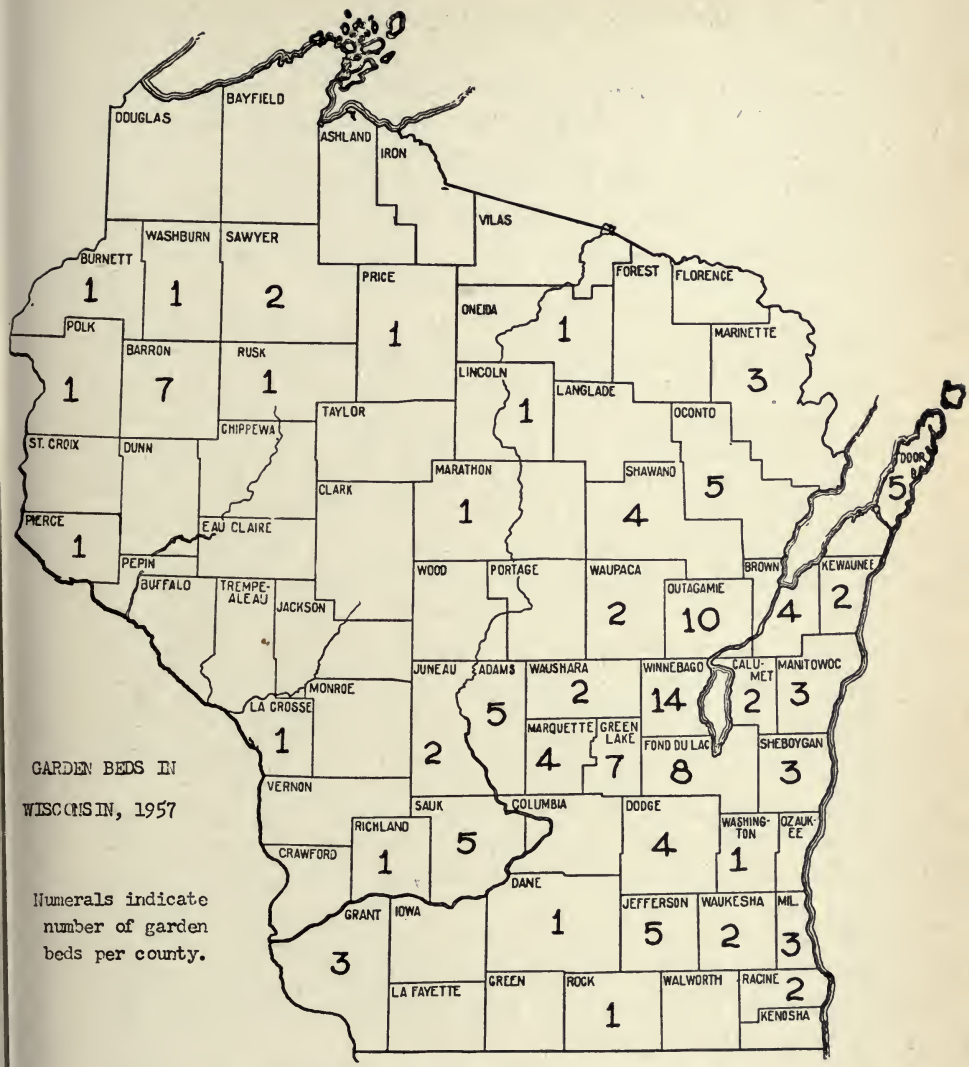
Wisconsin garden beds are most numerous in the east-central area, from Marinette County south, with a great preponderance in the Lake Winnebago, both upper and lower Fox River, and Wolf River regions. Winnebago County is credited with fourteen sites, Outagamie with ten, Fond du Lac with eight, and Green Lake with seven. In Outagamie County all but two sites are on the Wolf River. An exploration of the Wolf from Shawano south left the writer with the belief that many more beds than seen and reported lay hidden in the thick forests. On the northwest side of Little Lake Butte des Morts, the probable site of the Fox village of 1670 and later, garden beds were reported; their exact location was not found.

---

[13] Michigan Pioneer and Historical Collections, Vol. 2, 1877-78. Bela Hubbard, "Ancient Garden Beds of Michigan," p. 22.

[14] Charles E Brown, "A Record of Wisconsin Antiquities." The Wisconsin Archeologist, October 1906.

[15] Wisconsin Archeologists: March 1908, December 1909, April 1912, January 1925, April 1925.



Map 2. — Garden Beds of Wisconsin 1957.

A second grouping of eighteen beds is in northwestern Wisconsin. Barron County has seven; the other eleven are distributed one to a county, except Sawyer with two. Little is known about these beds. These could have been made by the Foxes reported in Outagamie County, as, on some maps, "Outagami" covers the western and northwestern areas.

Since practically all the garden beds known were found in southern Michigan and Wisconsin, and in consideration that their construction is similar, that is, groups of beds in which the paths and beds, while part of a single group, run in different directions, with a larger or smaller number parallel, it is improbable that the garden beds in Wisconsin were made by a different race than those in Michigan. While curved beds were found at the Eulrich farm in Wisconsin,[16] none have been found in Michigan, unless the circular beds about a "hub" and around the perimeter of "wagon-wheel" beds, three of which were found in Kalamazoo County,[17] and unless another wheel which Squire Edwards attempted to preserve on Pokagon Prairie, Cass County, are so interpreted. One such bed, with at least two concentric circular beds, was found at Lake Noque Bay[18] in Marinette County, Wisconsin; and part of a similar nucleus was observed at Shawano.[19]

Since the early French records show that a number of tribes (perhaps all tribes) were driven out of Michigan by the Ottawas and Neutrals some time between 1616 and 1648, and that these interlopers in turn were expelled by the Iroquois between 1649 and 1654, and that all of these dispossessed tribes fled into Wisconsin or Upper Michigan, it seems logical to postulate that the garden beds of Michigan were made before those in Wisconsin.

On the other hand, if the garden-bed tribe or tribes were not driven out of Michigan, it is possible that the miraculous

---

16 "Stonework and Garden Beds in Winnebago County," Wisconsin Archeologist, April 1922, Plates 1 and 2, p. 55.

17 Bela Hubbard, "Ancient Garden Beds of Michigan," Michigan Historical Collections, Vol. 2, 1878-79, pp. 24 and 25, and Figure 6, p. 35.

18 H. O .Younger and Geo. R. Fox, Wisconsin Archeologist, June 1918, "Marinette County," Plate II.

19 H. O. Younger and Geo. R. Fox, Wisconsin Archeologist, July 1917, "Lake Shawano and the Wolf River." Plate II, p. 69.

new civilization introduced by the "new gods," with its steel tools, copper pots, blankets, weapons, and liquor, which began replacing the native tools and methods at the beginning of the 17th century, eventually, eliminated the garden1bed complex and other associated cultural facets. Some time, if garden beds are still to be found, and are carefully excavated, trade material and European tools and weapons may be found in them.

The Creuxius and Lahontan maps show that at about the time of Champlain's arrival, the southern peninsula was occupied (according to the Hurons) by the Miamis (Oumiami), the Mascoutens (Assistagueronons), the Wea-Wuiattenons, the Foxes (Skenchiohronon), and the Sakis (Osakiwug),[20] certain unidentified tribes: Ekandechiondius, Etioheronius, and Teohronius, and at the northern end of the peninsula, Pays Orisatius and Pays Agatschias. The Kickapoo (Ontaraeronon) can be included as they were south or southwest of Lake Erie.

From 1616 to 1644 the Ottawa and Neutrals began to occupy the region vacated by the expelled tribes. The Chippewa by tradition, according to at least three accounts as told by the old men of that tribe, hold they were the ones who drove out the Sauk, annihilating almost the entire tribe some time after 1616. If so, and they managed to agree with the conquering Ottawa and Neutrals, they, too, were forced out later by the Iroquois.

In spite of Swanton's comment, "The ancient home of this tribe (the Potawatomi) was evidently in the lower peninsula of Michigan,"[21] it was true only in the sense that they were here about 1700 and thereafter, when, immediately after the Miami, they moved in. None of the early maps show them in lower Michigan, unless they were among the groups included in Champlain's account as Assistaeguerons, the Huron ethnic appelative which included the Nation of the Fork, Potawatomi,[22] Mascouten, Sauk and Fox, and Kickapoo. The Miami

---

[20] Handbook II. See Synonyms beginning, p. 1021.
[21] Swanton, John R., The Indian Tribes of North America, Bureau of American Ethnology, Bull. 145, 1952, p. 247.
[22] Handbook II, p. 471. J. N. B. Hewitt.

occupied all the southwest part of the peninsula, the Fox-Sauk group held the southeast, and the Pagus Etiohonius were in the west, north of the Miamis.

The early Wisconsin maps seem to show that for a long time the Menomini lived in the valley of the Menominee River, the Fox on Lake Winnebago and the Wolf River, the Sauk about the base of the Green Bay peninsula, and the Potawatomi on the Green Bay peninsula and the Potawatomi islands at its end. The Mascouten, Kickapoo, Kitchigami, and Miami were on the upper Fox and southwest of Lake Winnebago. The Winnebago (Otcangaras) were north and east of this lake (the Ottawa at the extreme north, the Illinois in the extreme south, the Chippewa along Lake Superior, and the Sioux in the northwest corner.

As the Sioux never were in southern Michigan they are eliminated as possible builders of the garden beds. The Ottawa never were in the central and southern regions of Wisconsin, nor in garden bed areas of the central part." Some Ottawa lived in Wisconsin temporarily after they had been driven from their old homes by the Iroquois." [23] About the beginning of the eighteenth century they began to move south into the central lake states. They are not found at that time living in southwestern Michigan. They were not the garden-bed builders.

The Menomini lived on the north side of Green Bay, on and near the Menominee River [24] between Wisconsin and upper Michigan. They settled on their Shawano Reservation in 1854. They never lived in Michigan's garden bed areas.

The homeland of the Illinois may have extended into what is now southern Wisconsin, but they never lived in Michigan.

Nor could the Winnebago have built the garden beds. The ". . . Puans (Winnebago) who have always lived here as in their own country," [25] and "the Winnebago," according to the Jesuit Relation of 1671, who ". . . have always dwelt in the Green Bay region," [26] are ruled out as builders of garden beds in Michigan.

---

23 Swanton, 1952, p. 256.
24 Swanton, 1952, p. 254.
25 Handbook II, p. 289, James Mooney and J. N. B. Hewitt.
26 Handbook II, p. 958, J. Owen Dorsey and Paul Radin.

The Kitchigami last mentioned by Perrot in about 1718, are shown on Thevenot's 1681 map,[27] as located just west of the mouth of the Wisconsin River. Hennepin, on two of his maps, shows the "Kitchiga," on the upper Fox River. "Probably the Kitchigami formed a part of the Kickapoo or Mascouten tribe.[28] If so they may have been in southern Michigan, and built garden beds there, and possibly later in Wisconsin. Their location in Michigan would probably have been on the western side.

The Kitchigami may have been a more important tribe, or clan, than is supposed. Lake Winnebago does not bear this name, "Winnebago" before 1793. On Coronelli's map, 1695, DeLisle's, 1703, and Jeffreys's, 1761,[29] it is called Lake St. Francis, so named by Allouez. But on four maps, dated from 1695 to 1794, it is marked Lake Kitchigamin.[30] Danville's map of 1755 calls it "Lac Kitchigaming ou de Ft. Francis,"[31] associating the two names Kitchigami, "Great water," with the Chippewa name for Lake Superior. Would the same name have been applied to a lake as relatively small as Lake Winnebago as compared to Superior? It might have been named for the Kitchigami who lived near it.

The Kickapoo, although no map or early record located them by that name in the peninsula, probably were early residents of southern Michigan. The close similarity of their language to that spoken by the Fox, Sauk, and Mascouten argues for a long intimate association. Within historic times the Kickapoo lived in central and southern Wisconsin, where garden beds were found. Of these they might have been the builders, but not of those beds along the Wolf River, nor those found on the Green Bay peninsula.

The Miami, whose name, given by the Chippewa, means "People who live on the peninsula-Omaumeg"[32] lived in the

---

[27] Karpinski, Thevenot's Paris map, 1681, p. 105.
[28] Handbook I, p. 706, Cyrus Thomas.
[29] Karpinski Coronelli, Paris, 1688, Plate VII; DeLisle, Paris, 1703, p. 47; Jefferys, London, 1761, p. 62.
[30] Karpinski Huske's map, 1755, London, p. 145; Guessefeld's map, Nuremberg, 1784, p. 171; Kitchen's map, London, 1794, p. 182.
[31] Karpinski Danville's map, Paris, 1755, Plate XVI.
[32] Handbook I, p. 852. James Mooney and Cyrus Thomas.

Michigan area where the garden beds were found. There is no direct evidence to place them in Michigan around 1600, or that they, too, were driven out by the Ottawa and Neutrals. But they were there for a short time in the neighborhood of 1700, when the river on which they lived, the St. Joseph, is recorded as "R. Ouimamis."

The French appear to have heard of them earlier, but Nicholas Perrot made the first contact with them in 1688.[33] Swanton says that when they were first known they were living in the neighborhood of Green Bay.[34] This seems doubtful for Tailhan's "Memoirs of Nicholas Perrot," says ". . . they withdrew into the Mississippi valley, 60 leagues from the bay and were established there from 1657 to 1676,"[35] Apparently they never were on the Wolf River, or Green Bay, or in the Lake Winnebago region, but only in southwestern Wisconsin. They are doubtful as garden bed builders.

After 1673 they must have been on the move. Soon after that time ". . . they formed new settlements at the southern end of Lake Michigan and on the Kalamazoo River."[36] Search failed to reveal any Miami sites along that stream. In Swanton's list of Miami villages,[37] not one is in Michigan. Seventeen were listed in Indiana. Miami villages are on record in southwestern Michigan. One site in shown in Wisconsin, on Coronelli's map of 1688,[38] where they are occupying a site southwest of Lake Winnebago with the Kickapoo and Mascouten.

Coronelli's[39] map also shows a Miami village on the St. Joseph River in Michigan, situated on the east side of the stream. On nine other maps the Potawatomi have moved in, shown on the west side. On the St. Joseph, both were in a garden bed area, as they might have been near Lake Winnebago. They appear to have been long enough in their Wisconsin home to make garden beds. They never lived along the Wolf River.

---

33 Swanton, 1952, p. 237.
34 Swanton, 1952, p. 238.
35 Handbook I, p. 852, James Mooney and Cyrus Thomas.
36 Swanton, 1952, p. 238.
37 Swanton, 1952, p. 238.
38 Coronelli's map, Paris, 1688, Plate VII.
39 Karpinski, Coronelli's map, 1695, p. 55, Venice.

The Miami were not left long enough on the St. Joseph to get permanently settled. The Potawatomi, in irresistible numbers, drove around the end of Lake Michigan and by, or before, 1700 had pushed the Miami into Indiana. Thus the Miami are not good candidates for builders of garden beds. If they did make the Michigan beds, it was before, or around 1600. In Wisconsin their stay was too short to permit any such work. In the return to Michigan, shortly before 1700, they did occupy the regions toward and about Saginaw Bay, although they had a village south of Detroit in this later period. Nor did the Potawatomi give them time or authority to build garden beds in Berrien, Cass, St. Joseph, or Kalamazoo Counties.

The Potawatomi have a better case for garden bed building, although there is no direct evidence by map or early document that the Potawatomi, by that name, ever lived in the south end of southern Michigan. Dablon discovered and reported about 1671 that the "Nation of Fire" was the Potawatomi. Dablon may have been wrong; before that Champlain, on information obtained from the Huron, had included under one term nearly all the tribes then in the lower Michigan peninsula, which would have included the Potawatomi had they been there.

It is certain that the translation of Potawatomi as "Fire Nation" is exact. Potawatomi informants have told me that it was given when the Potawatomi (possibly at that time without a name, were planning on separating as an independent tribe, from the other two of the "Three Fires," the Chippewa and the Ottawa. Surprised by the other tribes while preparing to leave, when accused of wishing to seperate, the Potawatomi explained that "We go to build a fire."

There is no evidence on any map, of the Potawatomi in the southern peninsula in or before 1660. Only by tradition are they placed there, as in Dablon's report of 1671:[40] "the Menominee, the Sauk, the Potawatomi and neighboring tribes, being driven from their own countries which are the lands southward near Missilimakinac." Allouez makes nearly the same

[40] Handbook II, p. 472, J. N. B. Hewitt.

statement, but including some other tribes.[41]

After the "Three Fires" separated on their arrival at the Soo or the Straits of Mackinac, the Ottawa moved east and southeast, settling along the northern shores of Lake Huron, and, according to Champlain, also on a part of the southern and southeast shores, and on Manitoulin, their main seat. The Chippewa pushed westward along the southern shore of Lake Superior and farther west, eventually encircling Lake Superior.

The Potawatomi, according to their own traditions, did not cross into southern Michigan but moved southwest and occupied Wisconsin's Green Bay peninsula, the islands at its tip, and to the south along the west shore of Lake Michigan where they "had a village at Jacksonport for 600 years."[42]

The tradition of their movements after the separation was given to Dr. Alphonse Gerend by Simon Kahquados, speaker in 1917 for the Wisconsin Potawatomi: "Potawatomi old men say nation first came Door County (Wisconsin) from Mackinac. Had first villages in that county and the islands. Spread south along lake shore. Later came around bottom lake at Che-ca-gou. Village there and Milwaukee."[43]

The Potawatomi lived in that part of Wisconsin where some garden beds were found. They seem never to have lived on the Upper Fox, west of Lake Winnebago. The Wolf River, as a place to live, was unkown to them until almost the present time.[44] If they made any garden beds in Wisconsin they were along the Lake Michigan shore.

In Michigan, from 1700 onward, the Potawatomi were the dominant tribe in the southern part of the peninsula and in northern Indiana. During this time the mission and trading post where Niles is now located operated first under the French, and later under the English. Had the Potawatomi at that time been building garden beds, early travelers would have known and recorded the fact.

Swanton, under "Potawatomi," lists and locates 49 of their

---

41 Handbook II, p. 472, J. N. B. Hewitt.
42 "The Potawatomi" by Publius V. Lawson, p. 51.
43 Ibid., p. 42.
44 "Lake Shawano and the Wolf River," by Geo. R. Fox and H. O. Younger, Wisconsin Archeologist, July 1917, p. 59-60.

villages;[45] 23 were in Indiana, and only 12 in Michigan. If they were building garden beds at this time, they should have built as many, or more, in Indiana as in Michigan. There are none in Indiana. Potawatomi friends of the writer say that the Potawatomi did not build garden beds. Had they built them while in Wisconsin, at places where they are reported to have lived, they built only about sixteen per cent of the beds there. Other tribes must have built the rest.

The Chippewa, who had early residence in Wisconsin about La Pointe and along the Lake Superior shore, never lived in localities where Wisconsin garden beds were found. There is no evidence that they ever lived in the southwestern part of the lower peninsula of Michigan where most garden beds in that state were found. During and just before Michigan's pioneer days, Chippewa villages were scattered in the counties along the Lake Huron side of the state; there is no evidence that these were established and occupied before and at the time of the Iroquoian activities. Out of 82 locations listed by Santon,[46] only 17 were in southern Michigan; of these, ten were in the Saginaw region.
ten were in the Saginaw region.

One reference was found tending to show that the Chippewa were in this area at the time of the expulsion of the Fox, Sauk, and Mascouten. This story is told by Mary A. Sigatoo in her book, "Thirty-three Years Among the Indians." Mrs. Sigatoo, a white girl, married a Chippewa and, on his death, married a second man of the same tribe. The following tradition was told her by Nack-chic-qua-ming, a very old member of the band.

"The Sauk grew strong and were dreaded by the Chippewas, Ottawas and their allies." Aroused by an attack by the Sauk which caused terrible losses of life among the Chippewa, ". . . the Chippewas, with their allies, not less than 3,000 warriors, in canoes came by the way of the Straits of Mackinac, down the shore (of Lake Huron)" to the Saginaw region. "The Chippewa reconnoitered their (Sauk) position" which was on Skull Island. After a great victory feast and

[45] Swanton, 1952, pp. 247-248.
[46] Swanton, 1952, p. 261 et seq.

the Sauks were all sleeping, the Chippewas began the massacre. "Not one of the Sauk escaped death." [47]

This tradition is in conflict with others telling how the Sauk, Fox, and Mascouten were defeated and driven from their Saginaw homes. If the Chippewa massacred all the Sauk before the Ottawa and Neutral came, there would have been no Sauk left to defeat and expel. Or if the Ottawa and Neutral had driven away or killed the Sauk and their families, the Chippewa would have found no one to massacre.

And so we are forced to conclude that the Chippewa, not living in the garden bed regions in Wisconsin, nor ever living in the southwestern part of Michigan, could not have been the builders of the garden beds in Wisconsin and Michigan.

With the Mascouten, Sauk and Foxes, and possibly the Kitchigami and Kickapoo, the problem is different: the first three definitely lived in areas where garden beds have been found, but, with the exception of the Foxes, not in all these regions. Due to the inaccuracies of the early maps, their exact locations, especially the limits of each tribe's area of occupation, are impossible to determine. On the earliest maps of Michigan and Wisconsin not only the land and lakes are little like the shapes on modern maps, but villages are miles away from their accurate locations.

Often the name of a tribe was spread across, or nearly across a district or state. On Sanson's map of 1656 the Oukouararaonons, whoever they were, extend from the southern part of Michigan's southern peninsula to its northern tip. [48] Creuxius, in 1660, gives the same region to the P. Eriehronons (Eries). [49-50] Lahontan stretches Ossisteronon across the peninsula and its thumb. [51] Charlevoix-Bellin's map of 1744 gives the Mascouten all the southern half of Wisconsin, [52] as does Bellin in 1755. [53] On the same map Pays des Rey-

47 "Wah-Sash-Kah-Moqua, or Thirty-Three Years Among the Indians," by Mary A. Sagatoo, Charles A. White Company, 1897, pp. 23, 24, 25.
48 Karpinski, Map of Nicholas Sanson, Paris, 1656, Plate III.
49 Karpinski, Map of Creuxius, Paris, 1660, p. 97.
50 Handbook II, p. 1053.
51 Frontspiece, The Totem Pole, Nov. 1956.
52 Karpinski, Charlevoix-Bellin map, Paris, 1744, p. 59.
53 Karpinski, Bellin's map, Paris, 1755, Plate XIV.

nards covers all the land west of Green Bay. Danville allots all the land of central Wisconsin west of Lake Winnebago to the Outagamie or Renards.[54] The pinpointing by map of any particular group of garden beds with any certain tribe is almost impossible.

The Mascouten lived in southern Michigan somewhere east of the St. Joseph River. Many of the garden beds of Michigan are found in this area.[55] Denonville states that in 1612 Champlain found (heard of) the Mascouten residing at Sakinam or Saginaw Bay.[56]

In Wisconsin the Mascouten lived in the region west of Lake Winnebago, where Perrot visited them previous to 1669.[57] Garden beds were reported all through this region but were not numerous in southern Wisconsin where the Mascoutens later lived. There is no record of their having lived in southwestern Wisconsin, nor near Green Bay. This, while garden beds are found in regions where they lived both in Michigan and Wisconsin, other beds are found where they did not reside.

The Sauk and Fox both lived in Michigan in the eastern part of the garden bed region. There is no proof that in prehistoric days their territory extended to Lake Michigan on the west. The story of the Ottawa-Neutrals war on them may possibly be history greatly tinged with tradition. Two towns, and probably many more, were destroyed; their exact location is unknown.

Sauk population in 1650 (Mooney's estimate)[58] was 3,500; the Fox at that time numbered 3,000.[59] Tribes of that size in those days must have needed a considerable area per man in order to exist. They could not have united all tribesmen in a single village. Perhaps they split into summer camps, returning in the fall and uniting in a single town. Lake Huron prevented any attempt to expand on the east. They had to move

---

54 Karpinski, Danville's Map, Paris, 1755, Plate XVI.
55 Karpinski, Lahontan's map, The Hague, 1703, Plate VIII.
56 Handbook I, p. 811, James Mooney and Cyrus Thomas.
57 Karpinski, Lahontan's map, 1703, The Hague, Plate VIII.
58 Swanton, 1952, p. 257.
59 Swanton, 1952, p. 251.

west, if they did move, and most of the garden beds in Michigan were found in the west.

In Wisconsin on several early maps the Sauk are placed in the territory at the base of the Green Bay peninsula. In 1669 they had a village near the mission at DePere.[60] They maintained this town until 1733 when they gave asylum to some Fox refugees from the French. A detachment of French and Indian allies, attempting to take the Fox by force, were repulsed and several Frenchmen were killed. Three days later the Sauk abandoned their village and fled to the Fox, then in the Outagami village on Little Lake Butte des Morts.[61] The Fox and the Sauk were together again and remained allies until 1804.

During much of this period the Fox and Sauk were on the upper Fox and Wisconsin rivers. In this area many tracts of garden beds have been found. While living here, some time about 1780, the Fox assisted the Sauk in driving the Illinois tribes from the northwestern part of the Rock River country, and occupied these territories.[62] Again they were in the region from which garden beds are reported, excepting northern Illinois.

The Sauk is one of the tribes that, while living in Michigan on the lower peninsula, was in the country of the garden beds. In Wisconsin, maps and records (mostly French) show that at one time or another they lived at the various sites where the beds are found, except on the Wolf River and in northern Wisconsin.

Thus the Fox nation is indicated as the makers of the garden beds. In Michigan the Fox lived close to the Sauk, both tribes near or on Saginaw Bay; the Mascouten on early maps were toward their west. Like the Sauk and Mascouten, in Michigan they lived in the region where garden beds were found.

In Wisconsin, for a brief time after they left Michigan, about 1642,[63] Allouez reported them at La Pointe.[64] From

60 Handbook II, p. 472, J. N. B. Hewitt.
61 Handbook II, p. 475, J. N. B. Hewitt.
62 Swanton, 1952, p. 251.
63 Handbook II, p. 473, J. N. B. Hewitt.
64 Handbook II, p. 473, J. N. B. Hewitt.

then on there are almost constant references to the Fox and Sauk. Their settlements are listed on nearly all early maps; for instance there were 31 locations listed by Karpinski from 1672 to 1794.[65] On these maps they are placed in the vicinity of Lake Winnebago, along the Fox River (upper and lower), on Green Bay,[66] along the Wisconsin River, in southern and southwestern Wisconsin, and along the Wolf River as far north as Lake Shawano. On the maps, "Outagami" is a favorite designation for the Fox, 27 maps using it. In only seven maps out of thirty-one[67] is the French term "Reynards" used.

Along the Wolf River are indications of a large population dwelling on its banks. These were the Fox. "In the spring (of 1665) the Fox notified the Sauk that they had established themselves in quarters 30 leagues from the Bay, forming a settlement of about 600 lodges."[68] Allouez adds that in 1667 ". . . at 25 leagues, at a place called Ouestatinong, dwelt the Foxes."[69] The importance of Ouestatinong lies in its being the principal, if not the only village of the Fox in their early years in Wisconsin. There is no doubt that it was on the Wolf River as, before 1700, it had been visited by many traders, and Father Allouez established (1670) the Mission of St. Marc there.[70] All along this river, from Shawano down, garden beds were found.

The many movements of the Fox, as recorded and as shown by maps, place them in every region where garden beds were reported, except possibly the Michigan area just east and north of the St. Joseph River. As they are the only tribe recorded by the French as living in the Wolf River valley, they must be the makers of the garden beds along that stream.

However, the probabilities are that the Fox were not the only tribe making garden beds. Because of the extremely

---

65 "Bibliography of the Printed Maps of Michigan and the Great Lakes," by Dr. Louis C. Karpinski. Published by the Michigan Historical Commission, 1931.
66 Swanton, 1952, p. 251.
67 Karpinski's Bibliography of Michigan and the Great Lakes.
68 Handbook II, p. 475, J. N. B. Hewitt.
69 Handbook II, p. 472, J. N. B. Hewitt.
70 "The Mission of St. Marc" by Louise Phelps Kellogg, p. 1, Wisconsin Archeologist, September, 1934.

close relations among the Fox, Mascouten, Sauk, Kickapoo, and Kitchigami, all of whom at one time or another lived in the garden-bed areas both in Wisconsin and Michigan, and because garden-bed making easily might spread from tribe to tribe, all these tribes may have employed this type of gardening.

We are assuming that their purpose was agricultural, but these "garden beds" may not have served their Indian makers in the same sense that modern gardens serve us. The general belief is that they were used for raising corn, based on the fact that a known method of storing corn was in pits, often called "cache-pits," and that such pits are often found in garden-bed plots. It it definitely known that the Indians of pioneer days were still using pits for storing corn. The first settlers of Cass County, Michigan, report instances where, on Pokagon and Baldwin prairies, Indian squaws visited and opened "corn-storage" pits in the presence of the settlers.

In several cases in Wisconsin garden beds with corn-hills among them were found. The writer found such an assiciation of beds and hills at New London, Wisconsin. As the types are interspersed, both must have been built by the same makers. In one bed, in Milwaukee County, Wisconsin, Lapham reported garden beds extending over an effigy mound.[71]

Opposed to the beds having been used for raising corn is the fact that corn hills were more commonly used. No record has been found of white men seeing Indians raising corn in garden beds; there are numerous reports of their having been observed planting corn in hills.

Another possibility is that the crop raised may have been beans. So far as known the Indian bean crop in Wisconsin and Michigan areas was negligible. Yet there must have been crops raised there by the Indians, and for a very long time. Skinner says. "There are five or six varieties (of beans) raised by this tribe" (Sauk).

These garden-beds differ primarily from any modern type in that the rows do not all follow one direction; nor is any attention paid to points of the compass. Usually a relatively

[71] "Indian Garden Beds," by Charles E. Brown, p. 97, Wisconsin Archeologist, August 1909.

few rows run side by side for a short distance, when another subgroup of parallel rows intersects at almost any angle. The Eulrich garden beds in Winnebago County, Wisconsin, have both long beds and curved beds, the latter being very rare.[72] It has been suggested that the sub-group is the bed of a single family.

Garden beds certainly are not a product of nature. Clearly they were man-made, and that man must have been an Indian. While definite proof of the purpose of their building is lacking, it appears to be agricultural. To what tribe or tribes they owe their origin may be disputed. Irrefutable evidence is lacking. From long study and wide research the balance of evidence appears to indicate that the makers of the garden beds were the Fox, Sauk, Mascouten, Kickapoo, and possibly the Kitchigami; one or all these tribes.

SIX MILE CREEK: A NON-POTTERY SITE ON LAKE MENDOTA

By Robert F. Maher

The camp site (Da7) reported on in this paper was discovered by Mr. Robert Nero when a drainage ditch excavation in the summer of 1950 turned up stone chips and artifacts at a location on the east bank of the entrance of Six Mile Creek into Lake Mendota. In the fall of that year, permission to excavate was obtained from the owner of the land, Dr. William Marquis of Madison and Waunakee, and excavations were begun under the direction of the author. Many persons aided in the digging. Among them were Professors David A. Baerreis and Milton L. Barnett of the Department of Anthropology at the University of Wisconsin and Alice Merz Jamowski, Ruthye Lesser, Robert Hall, Jack Jones, and Warren Wittry, at that time students at the university.

The excavation of sixteen five-foot squares dugs by the field party indicated that the cultural remains were concentrated horizontally within an area of approximately one thou-

---

72 "Stoneworks and Garden Beds in Winnebago County," by George R. Fox, The Wisconsin Archeologist, Vol. 1, No. 2, April 1922, Plates 1 and 2, Opposite pages 50 and 54.

sand square feet and vertically from the sod line to a rather uniform depth of eight inches. Fifty-four stone artifacts or fragments of artifacts, a piece of hematite, and a worked cube of galena were recovered. Not all of the worked stone specimens, however, were complete enough to allow an identification as to function or type. Two items of European manufacture, a crockery sherd and a shotgun shell, were found at the very top level of the sod line and in most likelihood had no connection with the other remains. At no level in any of the excavations was aboriginal pottery discovered, and although the culture bearing zone was excavated in four inch levels, no meaningful stratigraphy appeared. The latter condition was perhaps an inevitable situation in view of the rather small sample of reasonably complete stone artifacts and the total absence of pottery.

Figure 1. — Six Mile Creek Projectile Points.

Projectile Points

The investigation produced six complete projectile points and fragments of eight others. With the exclusion of three which were represented only by tips, the point specimens are illustrated in Figure 1. While size differences are not great, it can be seen that some variation in form is present. Among the complete points, length varies from fifty-six millimeters for the single-shouldered, lanceolate point in the lower center of Figure 1 to thirty-one millimeters for the corner-notched specimen in the lower right of the same illustration. The width of each of the points in Figure 1 falls in a rather narrow range from twenty-one to twenty-seven millimeters inclusive. In form, the most common is a side-notched variety, but it is difficult to tell whether all of this small sample which exhibit that characteristic fall into a single meaningful type. The fragment exhibited at the top, third from the right in Figure 1, for example, shows a resemblance to the Old Copper Complex [1] side-notched point which is not at all clear in the other points here. In addition to the side-notched category, two rather elongated triangular points (Figure 1, first and second from the left in the bottom) were uncovered. These are almost certainly not of the Mississippi Pattern triangular type, having a thickness and bulkiness that would be extremely exceptional in any Wisconsin series of Mississippi triangulars. The remaining form varieties are found in the single-shouldered, lanceolate point and the short, corner-notched point already mentioned and in the crude, thick-stemmed point illustrated in the upper left of Figure 1. All the points are of chert.

Blades

Four chipped stone artifacts were found, which for want of a better label will be termed here as blades. All are crudely flaked and show a rough lanceolate form. Only the smaller two are complete, with one measuring seventy-eight millimeters in length and the other sixty-nine. Both are thirty-five

---

[1] Robert Ritzenthaler (Editor), "The Old Copper Culture of Wisconsin", **The Wisconsin Archeologist**, Vol. 38, No. 4, Dec. 1957. Particularly see Plate 6, p. 199.

millimeters in greatest width. Any, or all, of them might have served as knives or spear points. All are of chert.

Drills

Three complete, and one fragment of flaked chert drills were produced by the excavations. The complete specimens are illustrated in Figure 2. All are fairly well made and exhibit an expanding base, although the drill on the left in Figure 2 can be seen to have a distinctly fuller base than do the other two. It it also the longest (forty-five millimeters) and the widest (twenty-one millimeters). The others have identical measurements being forty millimeters long and nineteen millimeters wide.

Scrapers

Nine specimens have been identified as scrapers, although some of the simple flakes discovered may also have served that function. Specific designation, however, has been reserved for those which exhibit cutting or scraping edges pro-

Figure 2. — Six Mile Creek Drills.

duced by secondary flaking. Other than sharing that characteristic, the scrapers at the Six Mile Creek site are a rather various lot, as can be seen from the five examples in Figure 3. This variety in form was apparently due to their maker's lack of concern for anything in a scraper other than an edge which could be sharpened. All of them appear to be simple flakes which have been retouched along one edge. As with the other chipped artifacts, all of the scrapers are of chert.

Ground Stone Artifacts

Three specimens were found which show signs of grinding or polishing, but only one can be identified as a true artifact with any confidence. It has one surface which appears to have been used as an abrader or polisher. The material of the object has not as yet been identified but appears, rather strangely, to be of a chert type. One of the other pieces is a

Figure 3. — Six Mile Creek Scrapers

fragment of sandstone which shows a regular and smoothed surface that might have been the consequence of an abrading function. The third specimen is entirely problematical. It is a smooth and possibly polished piece of limestone in a shape similiar to that of a bear canine. While it is suite possible that it has no cultural significance, its appearance in a culture-bearing stratum points up the possibility, at least of its being a true artifact, but beyond that nothing more can be said of it.

Galena Cube

One of the most interesting objects uncovered was a rather sizable, worked cube of galena (Figure 4). Its roughly cubical form has dimensions of thirty-eight, thirty-six, and thirty-three millimeters and shows clear evidence of working. Straight-line grooves, some running at right angles to others, have been cut into the object in many places without any clear meaning to the design, if design it is. A tempting interpretation is to see the cube as a weight for a fish net, with the grooves providing purchase for attaching lines. While this

Figure 4. — Worked Galena Cube from the Six Mile Creek Site.

seems a reasonable view of the specimen, plausibility is its principal support, and plausibility can also be mustered for other interpretations. It is possible that the cube was incompletely worked when it was lost or discarded, and the cuttings on it represent the results of incomplete efforts at dividing it into segments for some unknown purpose, or its owner my have simply been fascinated by the weight of the galena and and way in which the material could be cut. Either of these explanations, or others, is plausible and no effort is made here to choose between them.

Conclusions

In a number of ways, the Six Mile Creek site is as intriguing and as frustrating to interpret as the cube of galena just discussed. Some of the point forms present, coupled with the lack of pottery and general low concentration of remains, are features which one would expect to find at a campsite of a thinly scattered, nomadic Archaic people, periodically visiting the spot to exploit the food resources of Six Mile Creek and Lake Mendota. This may very well be the case, but aside from the Old Copper-like point base in Figure 1, the site's Archaic appearances come more from what is absent rather than from what is present. It is this lack of sharp diagnostic features which makes an interpretation of the site a difficult matter. Moreover, the paucity of artifacts and lack of apparent stratigraphy can give no assurance that only one complex is involved. But despite the ambiguity of the situation, the clues which are present suggest the possibility of an identification of the site as Archaic.

BEADS FROM A RED OCHRE BURIAL IN OZAUKEE COUNTY

By Arthur Niehoff

In March 1958 a Red Ochre burial, accompanied by 59 artifacts of copper and stone, was discovered near **Thiensville,** Ozaukee County, Wisconsin. The burial and artifacts were described in the **Wisconsin Archeologist,** Vol. 39, No. 2, June 1958. This burial had been removed when discovered by the boys of the property owner, Mr. Manford Blume. Test excav-

ation by Dr. Robert Ritzenthaler produced no further material. However, on several weekends following the original discovery, members of the Wisconsin Archeological Society did some further exploratory work and screened the sand which had been removed from the burial. A considerable number of new specimens were discovered. Twelve of the unnotched blades as described in the original report were discovered by Neil Ostberg and Paul Koeppler. These were heavily encrusted with ochre and ranged in length from 25 mm. to 46 mm. They were identical in shape to the 43 points originally discovered. A considerable number of unworked galena cubes were also found by means of the screening. The largest of these was 29 mm. in length.

One marine shell and four copper beads were found at the time the burial was removed. The screening by Ernest Schug and Paul Koeppler produced a large number of both kinds, numerous enough to have made up at least two or three necklaces. There were two types of shell beads: One, small, flat disk beads which were from 2 to 3 mm. in diameter; and two, tubular beads which were approximately 6 mm. in diameter and 8 to 9 mm. in length. All the copper beads were rolled

Figure 1. — Galena Cubes from Collection of Ernest Schug.

and varied considerably in dimensions, as if they had been arranged in a graduated series. The longest of these was 31 mm. and the shortest was 3 mm. They varied in thickness from 9 to 3 mm.

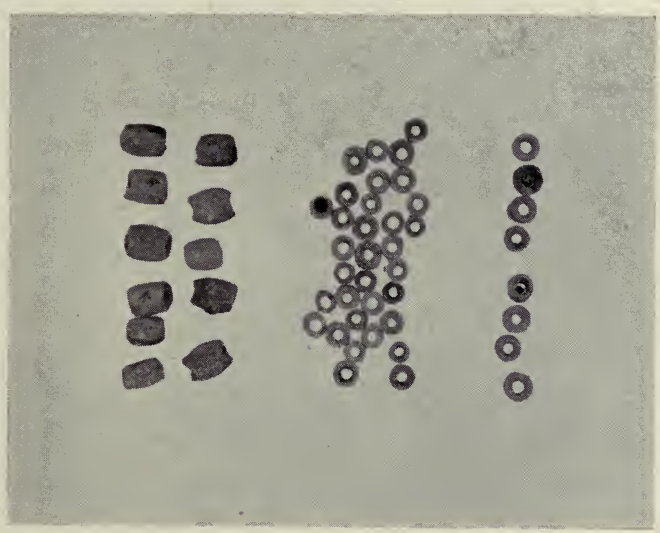


Figure 2. — Shell Beads from Collection of Ernest Schug.

Figure 3. — Shell Beads from Collection of Paul Koeppler.

Figure 4. — Copper Beads from collection of Ernest Schug.

Figure 5. — Copper Beads from Collection of Paul Koeppler.

—Many of the Wisconsin Archeological Society members are also interested in geology, particularly that of the local area. For those with an interest in geology alone, we recommend highly a recently published book, **Geology of the Great Lakes** by Jack L. Hough. The book has also a considerable importance to those with archeological interests. Geology and archeology have long been related sciences, each utilizing data gathered by the other. In particular, archeologists have looked to the science of geology as a source of dating many of their archeological finds. **Geology of the Great Lakes** contributes importantly to this need. Besides a general description of the modern lakes and their glacial history, a detailed history of each of the modern lake basins is provided. The methods of dating the time periods of the lakes are described and a comprehensive chart of the radio-carbon dates is included. An absolute time scale for the different periods is thus available. The book is well illustrated with charts and maps, and probably the most useful parts are the maps delimiting the glacial advances and the series of lake stage maps found on the last several pages. The archeologist who is interested in lake stage surveys will find these last very useful. All in all, the book can be highly recommended as a valuable addition to the reference library. It was published by the University of Illinois Press, Urbana, Illinois, 1958.

The Milwaukee Chapter of the Society held its annual "Swap Night" at the Mitchell Park Pavillion in December with about fifty members present. Although there did not appear to be a great deal of "swapping," several members brought parts of their collections and there was a lot of archeological visiting. Cake, coffee and other refreshments were served, due largely to the efforts of Mrs. Phil Wiegand.

The annual dinner of the Society will be held on May 18 at the Ambassador Hotel, Wisconsin and 23rd Streets, Mil-

waukee. Announcements regarding this dinner will be sent at a later date. We hope to have a large group this year as this will be a special honorary dinner. We particularly hope many of the Madison members will be able to come.

The following new members are welcomed into the Society:

Syl F. Adrian, Montello, Wis.

Karl W. Baker, M. D., Maple St., Turtle Lake, Wis.

W. A. Broughton, 225 Bradford St., Platteville, Wis.

Dr. Chester Chard, Anthropology Dept., University of Wisconsin, Madison, Wis.

Glenn Glass, Rt. 2, Alexis, Illinois

Dr. Margery Gray, Anthropology Dept., University of Wisconsin, Madison, Wis.

Frank A. Greene, Jr., 70 Blackstone St., Coal City, Ill.

Ed. J. Haka, 419 Portage St., Stevens Point, Wis.

Richard P. Heidemann, 91 Craig St., Madison, Wis.

Edwin C. Jensen, 4800 Winnequah Rd., Madison, Wis.

Mr. and Mrs. John R. Maher, 663 S. Wilder St., St. Paul, Minn.

Henriette Mertz, 5425 E. View Park, Chicago, Ill.

Richard W. Miller, Assoc. of Commerce, Fond du Lac, Wis.

Thomas A. Minardi, 411 Cline Ave., Mansfield, Ohio

Dean E. Neuchwander, Box 413, Maywood, Ill.

Charles J. Palmer, Star Rt., Spooner, Wis.

Harris A. Palmer, 448 W. Main St., Platteville, Wis.

Raymond Perkins, Rt. 2, Toulon, Ill.

Robert J. Salzer, 202 N. Pinckney, Apt. N., Madison, Wis.

Jeremiah M. Stark, Lamar State College, Beaumont, Texas

Dr. J. S. Supernaw, 304 Tenney Bldg., Madison, Wis.

Roy D. Thackeray, Green St., Melvin, Ill.

Marguerite Verley, 15228 Myrtle Ave., Harvey, Ill.

Jack Wilson, 1111 W. Springfield, Urbana, Ill.

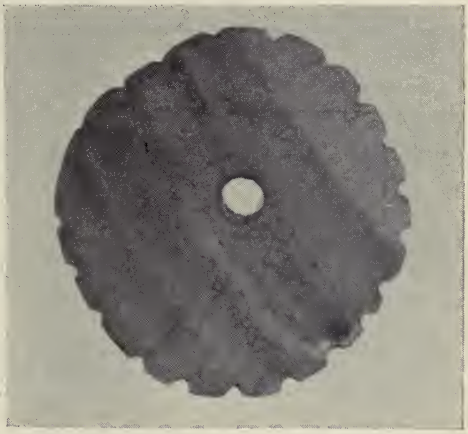
Dwight D. Waldo Library, West Michigan University, Kalamazoo, Mich.

Wisconsin Free Library Commission, 706 Williamson St., Madison, Wis.

Interesting Wisconsin Specimens

CATLINITE PENDANT

Made of mottled catlinite, similar to that found in Barron County, Wisconsin. Its length is 24 mm. and it is perforated at one end, presumably for suspension. Found on the surface near the Reigh Site, Winnebago County by Ernest Schug.



NOTCHED SHELL DISC

Made from a section of fresh water mussel shell with a hole in the center for suspension. The diameter is 25 mm. It was probably used as a bead or pendant. Found by Ernest Schug at Shaganappi Boy Scout Camp, Calumet County. County.

June, 1959 Vol. 40, No. 2

THE WISCONSIN ARCHEOLOGIST

KANSAS CITY, MO.
PUBLIC LIBRARY
SEP 14 1959

THE RADDATZ ROCKSHELTER, Sk5, WISCONSIN 3
Warren L. Wittry

GEOLOGY OF RADDATZ ROCKSHELTER, Sk5, WISCONSIN 6
Robert F. Black

ANIMAL REMAINS FROM THE RADDATZ ROCK-SHELTER, Sk5, WISCONSIN, Paul W. Parmalee 8

THE COLLECTOR'S CORNER 9

INDIAN RELIC MEETING 9

INTERESTING WISCONSIN SPECIMENS 9

WISCONSIN ARCHEOLOGICAL SOCIETY

Milwaukee, Wisconsin

Incorporated, 1906

For the purpose of advancing the study and preservation of Wisconsin Indian Antiquities.

OFFICERS

PRESIDENT

P. H. Wiegand

VICE-PRESIDENTS

Laurence Kracht — Dr. D. A. Baerreis — Herman O. Zander

Paul Scholz — Lincoln Smith, Jr.

DIRECTORS

Dr. E. G. Bruder — Kermit Freckman

ADVISORY COUNCIL

Frank Achen
Carlos Cortez
William Curkeet, Jr.
Edward Eichenberger
Dr. William Godfrey
Robert L. Hall
Dr. Robert Howard
Zida C. Ivey
Paul Koeppler
Mrs. Theo. Koerner
William Oestreich
Neil Ostberg
Louis Pierron
Allen Prill
Arthur W. Quan
Dr. Chandler W. Rowe
Chas. G. Schoewe
Kirk Whaley
Dr. A. H. Whiteford
Dr. Warren L. Wittry
Lincoln Smith, Sr.
Dr. Stephan F. Borhegyi

TREASURER

Martin Greenwald, 4567-A N. 30th S., Milwaukee, Wis.

SECRETARY

Nona Wiegand, 1276 N. 63rd Ct., Wauwatosa 13, Wis.

EDITOR

Dr. Robert Ritzenthaler, Milwaukee Public Museum, Milwaukee 3, Wis.

MEMBERSHIP FEES

The Wisconsin Archeologist is distributed to members as part of their dues.

Life Members, $50.00 — **Endowment Members, $500.00**

Sustaining Members, $5.00 — **Annual Members, $2.00**

Institutional Members, $2.00

All communications in regard to the Wisconsin Archeological Society and contributions to the Wisconsin Archeologist should be addressed to Phil H. Wiegand, 1276 N. 63rd Ct., Wauwatosa 13, Wis. Entered as Second Class Matter at the Post Office at Lake Mills, Wisconsin under the Act of August 21, 1912. Office of Publication: 204 N. Main St., Lake Mills, Wis.

THE WISCONSIN ARCHEOLOGIST

New Series

Published Quarterly by The Wisconsin Archeological Society

MILWAUKEE, WISCONSIN, JUNE, 1959

THE RADDATZ ROCKSHELTER, Sk5, WISCONSIN

Warren L. Wittry

State Historical Society of Wisconsin

During the summer of 1955, while the writer was excavating rockshelter sites in the vicinity of Leland, Wisconsin, permission was secured from Mr. Richard A. Raddatz to test the deposit in the shelter located underneath the famous Natural Bridge on his property in the S½, NW¼, Sec. 17, T 10 N, R5E, Sauk County. Evidence that the shelter had been occupied by prehistoric Indians was previously noted in the spring of 1954 when potsherds, animal bone refuse, and chert flakes were found within a few inches of the surface.

The test pit was 5-foot square, excavated in arbitrary 4-inch levels to a total surface depth of 9.5 feet. The results of the test — the artifacts and the excellent stratigraphy of the profiles — indicated that more extensive excavations would result in a body of much needed stratigraphic data. Accordingly, plans were made for a major excavation project during the summer of 1957. In this, the final report on the Raddatz Rockshelter, the data from the 1955 test (Wittry 1958) are combined with those of the 1957 project.

Acknowledgements

The 1957 expedition was financed by a grant from the Hamilton Foundation of Two Rivers, Wisconsin, to the State Historical Society. In awarding the grant, Mr. E. P. Hamilton, foundation president, followed the pattern of interest in Wisconsin archeology established by his father, Henry P. Hamilton, whose renowned collection is exhibited in the museum of the State Historical Society.

Thanks are due to Mr. Raddatz for generously permitting us to conduct the investigations here reported. The radiocarbon dates were obtained through the cooperation of Prof. H. R. Crane and Dr. James B. Griffin of the University of Michigan.

James W. Porter helped dig the test pit. The members of the crew for the 1957 project were James Gibson, James Schwartz, James Watson, and Robert Ritter. David C. Danhouser cleaned the specimens in the lab. A large measure of the success of the fieldwork was due to the excellent cookery of Mrs. George Yanke, Denzer.

To the Hamilton Foundation and these individuals, the writer here records his sincere thanks.

Site Description and Recent History

Since the accompanying paper by Robert F. Black describes in detail the geology of the site and the manner in which the bridge, the shelter, and the shelter deposits were formed, this description will be confined to the general setting of the lo-

Fig. 1. The Natural Bridge and the Raddatz Rockshelter, Sk5. Camera orientation: east-southeast.

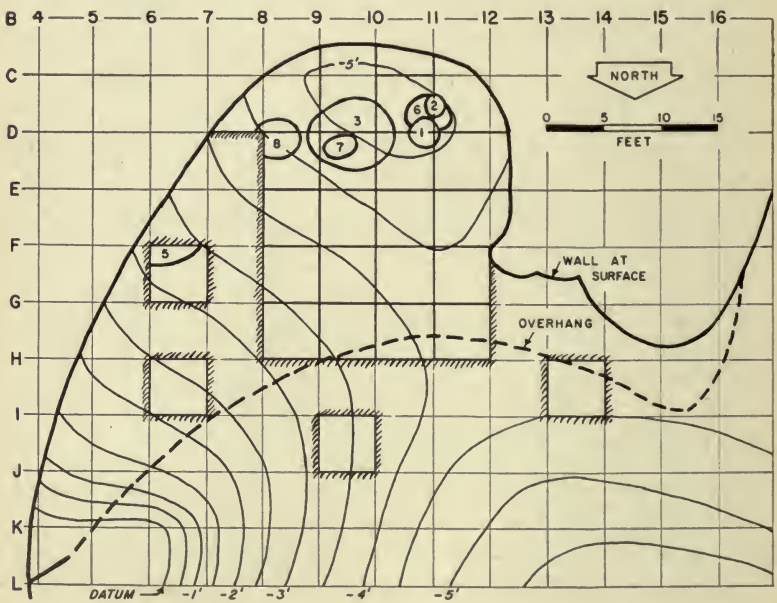
cality. The bridge is part of a narrow spur of sandstone and is oriented approximately northeast-southwest, the base of the latter end resting directly over the rockshelter (Fig. 1). The bridge opening is about 25 feet wide and 15 feet high. The span is about 10 feet thick and 4 feet wide at its narrowest point. The top of the bridge is about 35 feet above the ground surface of a small glen which lay immediately west of the bridge and north and west of the shelter's opening. The glen is about ¼ acre in area, surrounded on the east and southeast by the bridge and shelter, and on the west by a steep bluff rising somewhat higher than the elevation of the bridge. There are small openings in the north side and in the southwest corner, but the land surface is higher at the openings than it is in the center of the glen.

The North Branch of Honey Creek is 1.25 miles west of the shelter and the East Branch is a little less than 2 miles east. At the present time there are marshy areas along both streams, in contrast to the wooded hills of the region. The streams are now the nearest natural sources of water. However, a hillside spring less than ¼ mile to the southwest was flowing until about 50 years ago. There were perhaps other springs closer to the site and the presence of snow in the winter would have provided an immediate supply of water.

Although our investigations brought to light evidence that the site had been visited by Indians for thousands of years, the scenic beauty has not gone unnoticed by Whites. For nearly a century, visitors from near and far have resorted here for recreation. During the summers of the 1880's and '90's, a wood floor was erected in the glen for dances. A canvas above provided shelter and the refreshments were served from a counter at the mouth of the shelter. The same facilities were used for school and church programs except the refreshments were softer. On the rock wall, west of the shelter, literally hundreds of names and initials have been carved in the sandstone rock. There are no Indian petroglyphs evident.

Most probably, it was during this period of intensive recreational use that the upper portions of the deposit were

removed in order to make more headroom in the shelter. It was certainly done prior to 1903 when the land was acquired by the father of the present owner. In all of the areas excavated we found at the top of the deposit a layer of dark gray sand ranging from 8 inches in thickness near the southwest wall to over 2 feet in thickness in the vicinity of Square I 7. In many places this soil was laminated and had the appearance of having been washed into position by water. Below the top zone lay the undisturbed deposits containing the occupational refuse of prehistoric Indians. Further evidence that the removal was made during the historic period was provided by the fact that we found the impressions of heeled boots on the surface of the undisturbed deposits and historic iron and glass artifacts mixed through out the top gray zone. To confirm our suspicions that some of the soil removed from the shelter was dumped out in the glen, we dug a test pit and found chert flakes, thin cord-marked potsherds and bone refuse in mixed deposit extending a few feet below the surface. There must



Map 1. The Raddatz Rockshelter, Sk5. Contour interval is 0.5 foot, figures indicating depth below datum in feet.

have been occupation of the shelter during Woodland times, but the upper deposits containing it were removed. Eighty-six potsherds of Late Middle Woodland and Late Woodland types were found in the top gray zone and in other clearly disturbed areas.

Interestingly enough, the lower sections of cedar posts that probably served as supports for the refreshment counter were found penetrating the undisturbed deposits to an average depth of 1.5 feet. They were aligned in two rows east-west across the G row of squares. The bases showed that they had been cut with a steel axe and the upper parts were truncated at that line of juncture between the undisturbed deposits and the redeposited zone.

The opening of the shelter is 50 feet wide, facing north but protected from prevailing winds by the presence of rock eminences mentioned above. Thirty feet is the maximum distance from front to rear. At the time excavations were initiated the surface sloped inward toward the rear of the shelter (Map 1). The highest point of the ceiling of the shelter was 7.8 feet above the surface of the deposit and was at least 6 feet high over about three-fourths of the shelter's area.

Excavations

In 1955, when the test pit was excavated, a horizontal grid with major axes oriented north-south and east-west was established by the placement of stakes at key points. These stakes were still in position when work began in 1957 and were used as the basis for a complete grid of five-foot squares over the area of the shelter and extending outward for a small distance. The squares were designated by the letter and number coordinates of the northwest corner (lower right hand corner on Map 1). In terms of the grid, the 1955 test pit was Square F11.

An arbitrary datum plane was the primary of two reference points used to record elevations. The other, which varied in elevation, was the surface of the deposit. A transit was used to take all surface readings and some of the elevations of levels and natural strata, but most of the depth readings were taken from the surface and were correlated with the

datum plane by the use of several reference points incised in the wall using level lines and measuring sticks.

The basic method of excavating was to treat each square as a unit which was "taken down" in 4-inch levels, numbered consecutively from the top down. Levels 1 and 2 in all squares were assigned to the zone of redeposited dark gray soil at the top of the deposit. The higher elevations of the surface at the front and eastern side of the shelter were due to a greater thickness of this top zone, the truncated surface of the undisturbed deposit being essentially level over the area of excavations. In those squares where the top gray zone exceeded 8 inches in thickness, it was arbitrarily divided at its midpoint and the materials assigned to Levels 1 and 2. Thus, by assigning Level 3 to the top 4 inches of the undisturbed deposit, the levels of the various squares were on the same horizontal plane. The sides of the squares adjacent to the shelter wall were allowed to conform to the configuration of the wall. Upon digging down below the surface it was found that the walls continued their outward slant so that the surface areas of the deeper levels were enlarged.

Square E11 was excavated by natural strata corresponding

Fig. 2. Excavation Procedure. Photo by Bob Anderson, The Sauk-Prairie Star.

to those described in the accompanying paper by Black, but for purposes of this analysis its artifacts have been assigned to equivalent numbered levels of the other squares. The deposit was first loosened with a trowel or shovel and then put into a ¼ inch mesh screen (Fig. 2). The loose sand was shaken directly into a wheelbarrow and the residue carefully inspected and all bone and shell refuse (except the smallest splinters) and cultural remains were bagged according to the square and level. The waste dirt was wheeled out into the glen and dumped. At the close of the dig the excavations were filled according to the wishes of Mr. Raddatz.

It was dark in the shelter. The combination of the shelter's facing north, the moderately high bluff's surrounding the glen, and vegetation prevented enough light from reaching the excavations for good work. We had anticipated this because it had been found necessary to use a gasoline lantern to dig the test pit. For the major excavations, a portable generator was installed around the corner to the west of the shelter. Brewery cord was strung around the ceiling and held in place by surveying arrows wedged in cracks. This allowed electric lamps to be installed over the screens. The shovel men were aided in their work by a number of trouble lamps which could be easily moved about in order to best illuminate the area being excavated.

As the five-foot square columns were being taken down, great care was exercised to keep the profiles nearly vertical (a slight slant was required as a precaution against cave-ins) and as clean as possible so that materials would not fall from the upper levels to be found in lower levels of the square being excavated. All profiles were photographed in black and white and in color and were sketched to scale. Except for the four squares detached from the main excavation, at least one, usually two, and sometimes three profiles of the square being taken down were visible. This and careful cleaning of the floor of each level allowed the aboriginal pits, rodent burrows, and other disturbed areas to be easily traced and their contents kept separate from the undisturbed remains.

Under this strict column and block method of excavation,

the pit features which happen to be intersected by grid lines are removed in two or more parts, depending on how many squares they overlapped. Thus, the contents of a single feature may be brought back to the lab in as many as four or six bags. The advantage of having complete "wall-to-wall" profile records seems to far outweigh any good that would come from removing the pits as units. If, however, burials or other complex features are encountered, this procedure must be modified in order to expose them intact. Fortunately, or rather unfortunately from the standpoint of the discovery of data, we did not find burials in the Raddatz deposit.

The fieldwork lasted 8 weeks during July and August, 1957. The total surface area excavated was 675 square feet and the volume of screened earth was over 4,900 cubic feet. Although nowhere did we reach bedrock, controlled excavation was conducted well below the deepest evidence of occupation in each square and numerous deep shafts were dug as tests below that. In Squares G9 and G12 depths of over 12 feet below the surface were attained, at least 5 feet below the deepest cultural remains.

I believe, from the manner in which the occupational evidence was concentrated toward the rear of the shelter and the sparse indications in the detached squares, that the sample obtained is over 75 per cent of the site's total content and that further excavations at the present time would only tend to duplicate the discoveries reported here. Enough unexcavated deposit remains, however, to allow additional investigation when improved techniques for the recovery of information from the soil are developed. All artifacts, field notes, maps, photographs, and other records from the Raddatz site are now in the anthropology section of the State Historical Society Museum.

Stratigraphy of the Deposit

The major changes in the deposit resulted from certain geologic events and human occupation. In the field, ancient occupational surfaces (i. e., zones) could be most readily determined by concentrations of charred wood, ash, faunal remains, and artifacts in horizontal layers. A few of these were

limited to a few square feet in area, most could be traced over greater areas, and some could be traced over the entire excavated area, except where interrupted by features or rodent burrows.

Our initial digging technique (4-inch levels of 5-foot squares) was retained when we found that the well defined occupational layers were horizontal and corresponded to specific excavation levels in the various squares. Of the major zones, only Stratum I had a slight dip northward toward the mouth of the shelter, but in almost every square beneath the overhang it corresponded with excavation Level 12.

Some interesting physical and chemical characteristics of the major occupation zones which serve to differentiate them from other, less intensively occupied zones are given in Black's paper. Following are the important correspondences in designation between the archeological levels and geological strata.

Stratum A — Levels 1 and 2. Evidence of historic occupation by picnicers, etc.

Stratum C — Level 3.

Stratum D — Level 6.

Stratum F — Located at approximately the boundary between Levels 9 and 10, but contained mostly in Level 10. This stratum is the point of origin of Fea. 3.

Stratum I — Level 12 .

Features

Of the eight features found and recorded in the excavated area. one (Feature 4) was a firebed and the remainder were pits. There were literally hundreds of firebeds of greater or lesser size scattered throughout the occupied portions of the deposit. In no instance was there any indication of a prepared place for the fire such as might be fashioned of stones or by digging. The fires were simply laid on the surface. Although there was evidence of fires being built in all of the areas covered by the excavations, the greatest concentration of them was towards the rear of the shelter. Ash and small charcoal flecks were all that remained in most of the firebeds, perhaps an indication that they had been allowed to burn out instead of being smothered. The designation of firebeds as separate features was soon abandoned when it became im-

possible to distinguish the many overlapping beds contained in the major occupational zones.

On the basis of depth of origin and contents, two of the pits (Features 1 and 2) must have been dug during Woodland times. The remaining five were dug during the Archaic occupation. The pits also tended to be located near the rear wall (Map 1). Most of them were oval in outline, ranging from less than 3 to more than 8 feet in maximum diameter and from 1.4 to 2.4 feet in depth. Although the pits contained refuse, their original purpose was probably for storage, but nothing was found to indicate what had been stored in them. Since the pits were filled with nearby surface soil, some of which may have been dug out of the pit, the contents do not necessarily reflect a close cultural or temporal relationship to each other. Thus, the Raddatz point found in Feature 1 very probably was dug out of the Archaic zones and replaced in the pit along with Woodland pottery at a later tme.

The depth of origin of the pits is of importance, however, because the contents would date either from that level or from an earlier time. For example, the corner-notched projectile points found in Feature 3, originating in Level 10, antedate most of the other projectile points found at this site.

Feature 1. The origin of this pit must have been somewhere above the undisturbed deposit as it was truncated by the zone of redeposited dark gray soil at the surface. Its dimensions were 2.8 feet north-south, 2.5 feet east-west, and it penetrated to a surface depth of 2.8 feet or 2.0 feet into the undisturbed deposit. The contents included a fragment of a turtle shell bowl, the base of a Raddatz Side-notched projectile point (Fig. 3, U), 4 Woodland bodysherds, a calcined antler tine, 1 chert flake and 2 chert blocks. Fragments of birch bark, exhibiting square-cut corners and parallel folds 85 mm. apart, are probably the remains of a container rather than a lining for the pit. There were 68 ounces of animal refuse in the pit.

Feature 2. This pit, 1.6 feet in diameter, also was dug from an occupational surface above the undisturbed portion of the deposit. Maximum depth below the surface was 3.1 feet, the dark gray zone being about the same thickness here as it was

over Feature 1. One chert block and 14 ounces of bone refuse were found in it.

Feature 3. This, the largest pit, was 8.7 feet east-west and 6.6 feet north-south. Its point of origin was 3.0 feet below the surface, on the boundary between Levels 9 and 10. From that point, it was 1.4 feet deep. The artifacts found in it include 2 corner-notched projectile points (Fig. 4, H, I) and a barbed antler point (Fig. 8, B). Other contents were 2 chert flakes and 27 ounces of faunal remains.

Feature 5. The location of this pit, on the eastern side of the shelter, was in an area where the top of the top gray zone was 1.3 feet thick. It originated at a total surface depth of 4.0 feet or 2.7 feet below the surface of the undisturbed deposit, in Level 10. This feature was only partially excavated but a fairly large size of at least 5 feet in diameter was indicated. The bottom of the pit was 1.7 feet below its origin. A small chert knife and 10 ounces of animal bones were found in it.

Feature 6. A surface depth of 3.4 feet, in Level 11, was the point of origin for this pit which was 3.6 feet east-west and 2.8 feet north-south. It was 2.4 feet deep. Its contents included part of a chert knife (Fig. 6, C – the remainder being found in Level 12 of Square E11), a chert flake and only 1 ounce of bone.

Feature 7. This pit, originating in Level 5, was 2.8 feet east-west, and 1.7 feet wide. A Raddatz Side-notched projectile point (Fig. 3, I), a small block of chert, and 12 ounces of bone refuse was found in it.

Feature 8. This feature had an approximate diameter of 3.2 feet. It originated 3.5 feet below the surface, in Level 11, and was over 1.5 feet deep. Although most of this feature was excavated, no artifacts and only 1 ounce of bones were found.

Chipped Stone Artifacts

With few exceptions, the chipped stone artifacts were made of the chert occurring in the dolomites of southwestern Wisconsin. The nearest sources to the Raddatz rockshelter are only a few miles to the east and south. Three of the Durst

Stemmed projectile points, 1 scraper, and 1 unclassified knife were quartzite and only 5 flakes and 2 blocks were of this material. Nine flakes of basaltic rock were found in Square H9 just above Stratum O at a surface depth of 7 feet. This material, as all of the stone except the unworked rounded quartzite pebbles, had to be carried to the shelter from outside sources.

Raddatz Side-notched projectile points. By now it has been established that one of the characteristic projectile point shapes of the Archaic period in the central and northern Mississippi valley is basically of lanceolate outline with a straight or concave (rarely convex) base and bold side notches as a means of hafting (Fowler, 1957). Variants of this essential form have been named Hemphill Notched (Scully 1951:7), Osceola Points (Bell 1958:68, 69), Graham Cave Notched (Scully 1951:8), Black Sand Notched (Scully 1951: 10), and Madison Side Notched (Baerreis 1953:154). The first two names refer to the larger well finished examples found at the Osceola Old Copper cemetery and elsewhere in the area. The Graham Cave type is also of larger size, but of a slightly more distinctive shape. The Black Sand and Madison names have been applied to smaller points of similiar outline. Both are reported associated with ceramics (Cole and Deuel 1937, Baerreis 1953:154), and possibly represent a survival of the Archaic type into Woodland times.

With these names already established in the literature, it may seem a bit presumptuous to apply a separate name to the points of this shape which have been excavated in Wisconsin rockshelters and found elsewhere in the state. We are doing so on the basis of their having a well defined preceramic occurrence in the Raddatz rockshelter and in the Durst (Sk2) and Governor Dodge State Park (Ia1) rockshelters (Wittry, 1958), and the relative uniformity in size and similar range of variation at these sites.

Present indications are that the side-notched projectile point is a trait which lasted for several thousand years during the Archaic period and probably into Woodland times in modified form. It is reasonable to expect that there would have occurred minor differences in form due to regional expression

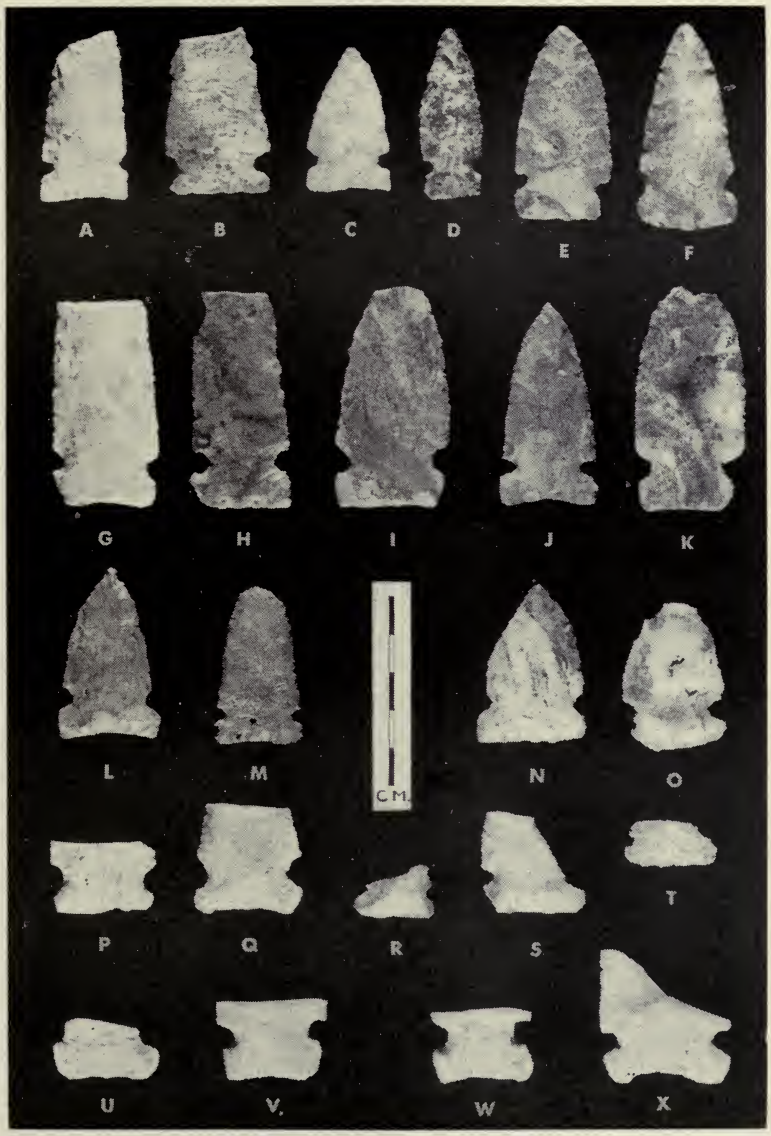


Fig. 3. Raddatz Side-notched Projectile Points.

and temporal factors. As these variants become better known, through additional field work and study, it should be possible to eventually distinguish varieties of the type. Such varieties in the Wisconsin area would be designated most appropriately as Varieties "A", "B", etc., of Raddatz Side-notched.

The Raddatz Side-notched projectile points (Fig. 3), show considerable signs of resharpening and breakage. This is quite normal among the artifacts found in habitation sites, most of which are intentional discards by the aboriginal occupants. The original outline was lanceolate with a tendency for the sides to be parallel, slightly convex, or slightly tapering toward the tip; converging rather abruptly to the tip. The form was achieved by percussion flaking with pressure flaking being used primarily to even the edges of the blade. The notches are set close to the base, perpendicular to the long axis and tend to be U-shaped, although a few are more rounded or more squared. They are usually about as deep as the are wide, about 4-5 mm. Of the 31 specimens from this site, the exact form of the base is unknown on 3, 23 have straight bases, 2 slightly concave and 3 slightly convex bases. Twenty-three or 74% have grinding on the base. Length on 11 specimens ranges from 38-64 mm., averages 49.4 mm., but this figure should be taken as a minimum rather than typical because of resharpening. Width (N23) ranges from 16-34 mm., averages 25.9 mm. Stem length (base to shoulder, N22) ranges from 8-17 mm., averages 12.9 mm. The minimum width between notches (N23) ranges from 11-25 mm., averages 19.1 mm., but on 19 speciments this dimension falls in the more limited range of 17-21 mm. Thickness (N22) ranges from 7-11 mm., averages 8.6 mm. These dimensions and the minor ranges in variation of shape compare very nicely with 40 specimens of this type from the Durst rockshelter, only one mile distant (Wittry, 1958).

Straight-stemmed projectile points (Fig. 4, A-G) are characterized by slightly convex or tapered edges of the blade. The shoulders are well defined, but not prominent. The stem is parallel-sided and the base straight. The length ranges (N4) from 43-58 mm., averages 49.0 mm. Width ranges

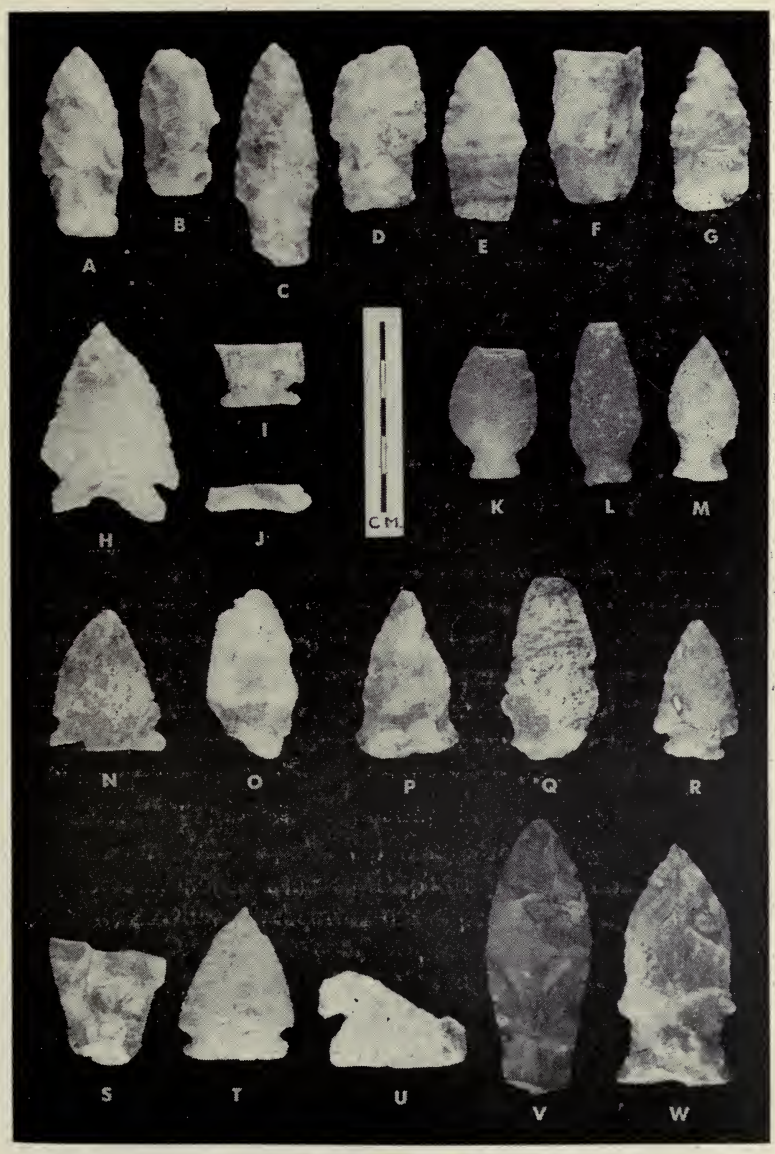


Fig. 4. Projectile Points: A-G, straight-stemmed; H-J, corner-notched; K-M, Durst Stemmed; N-W, unclassified.

(N6) from 21-25 mm., averages 22.6 mm. Stem length (N11) ranges from 17-20 mm., averages 18.0 mm. Stem width (N11) ranges from 18-22 mm., averages 19.0 mm. Thickness (N10) ranges from 7-10 mm., averages 8.7 mm. None, of the total of 11 specimens, exhibits any grinding on the base.

Corner-notched projectile points (Fig. 4, H-J). Only 3 of these thin, relatively broad points were found in the excavations. The notches originate from the corner and are relatively long and narrow. The most complete specimen (Fig. 4, H) measures 50 mm. in length, 36 mm. in width, 9 mm. in stem length, and 6 mm. in thickness. The base of this specimen was originally straight or only slightly concave. Compare its recurved, "graver" tip with that of the unclassified point (Fig. 4, T). Two basal fragments show slight grinding.

Durst Stemmed projectile points (Fig. 4, K-M). Sixty-three specimens of this distinctive shape found in the Durst rock-shelter were the basis for the original definition of this type (Wittry, 1958). The 4 Raddatz site specimens conform to the type definition in every respect except for the fact that they all bear grinding on the base while this feature is lacking on the entire Durst site series. We now include basal grinding as an alternate feature of this type. This type was produced by the removal of long shallow notches from the corners of a leaf-shaped blank. The shoulders are rounded and generally represent a transitional zone of curvature from the stem to the convex-sided blade. The stem expands slightly to a gently rounded or straight base, the latter being far less frequently the case than the former. Length (N3) ranges from 38-47 mm., averages 42.6 mm. Width (N4) ranges from 19-23 mm., averages 20.5 mm. Stem length (N3) ranges from 12-13 mm., averages 12.7 mm. Thickness (N4) ranges from 6-7 mm., averages 6.2 mm. These dimensions, except thickness, are slightly larger than those for the Durst site points, but the number of speciments involved is too small to allow much significance to this fact.

Unclassified projectile points. All of the more or less complete specimens and recognizable basal sections are illustrated in Fig. 4, N-W. Probably most of specimens N through R were reworked from what were originally Raddatz points.

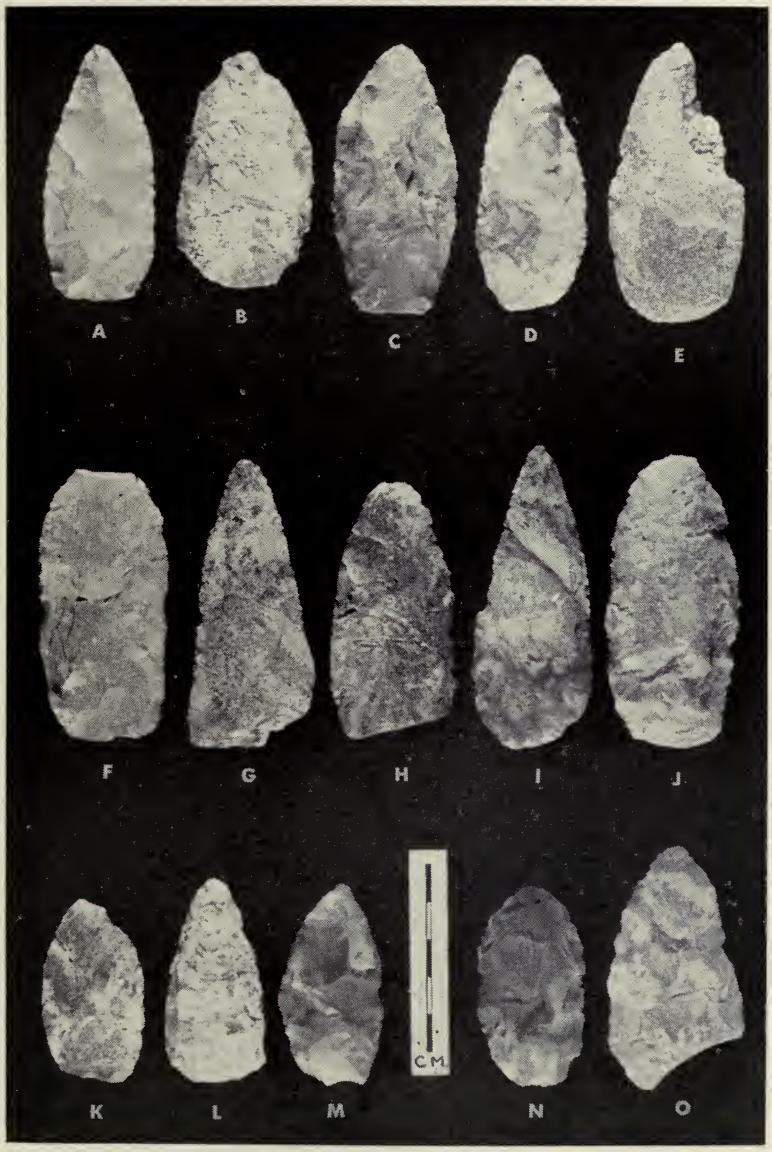


Fig. 5. Symmetrical Knives.

The dimensions of unclassified points, as well as all illustrated artifacts, are listed in the appendix.

Knives. Of the total of 23 knives, 19 can be grouped into a single typological category. These specimens (Fig. 5) are symmetrical in general outline and were shaped primarily by percussion flaking. Only a few have been slightly retouched by pressure flaking. The outline is ovate with a sharpened tip. One specimen has a straight base, 6 bear the striking platform at the base, and the remainder have rounded bases. No grinding is evident. Length (N17) ranges from 44-79 mm., averages 63.0 mm. Width (N19) ranges from 24-36 mm., averages 31.0 mm. Thickness (N19) ranges from 6-17 mm., averages 10.8 mm.

The 4 unclassified knives are shown in Fig. 6, A-D. The edges of A have been ground smooth through use. B is an asymmetrical knife which has also served as a chopping implement. C and D are oval knives with cutting edges that completely or nearly completely encircle the implement.

Scrapers (Fig. 6, E-L). In proportion to the number of projectile points, the number of scrapers is quite small. Only 8 were found. Four (E-H) are side scrapers, F being of quartzite and having a concave edge. J has a finished outline and may be a modified projectile point tip. K and L resemble a type of small end scraper of which 22 were found in the early Archaic zone of the Durst rockshelter.

Drill (Fig. 6, M). The single drill is apparently fashioned from a side-notched projectile point. It has a thin T-shaped outline. The base is ground.

Ground Stone Artifacts

Four small fragments, each not exceeding 35 mm. in greatest dimension, are parts of ground stone implements. The material is basaltic rock. A bit fragment was found in D12, Level 3. Fragments indicating a grooved axe were found in E12, Levels 5 and 7; and E11, Level 7.

A quartzite grinding stone was found in Level 7. Four rounded quartzite pebbles which had been used as hammerstones were found in Levels 3, 5, 7, and 10.

Fig. 6. A-D, knives; E-L, scrapers; M, drill.

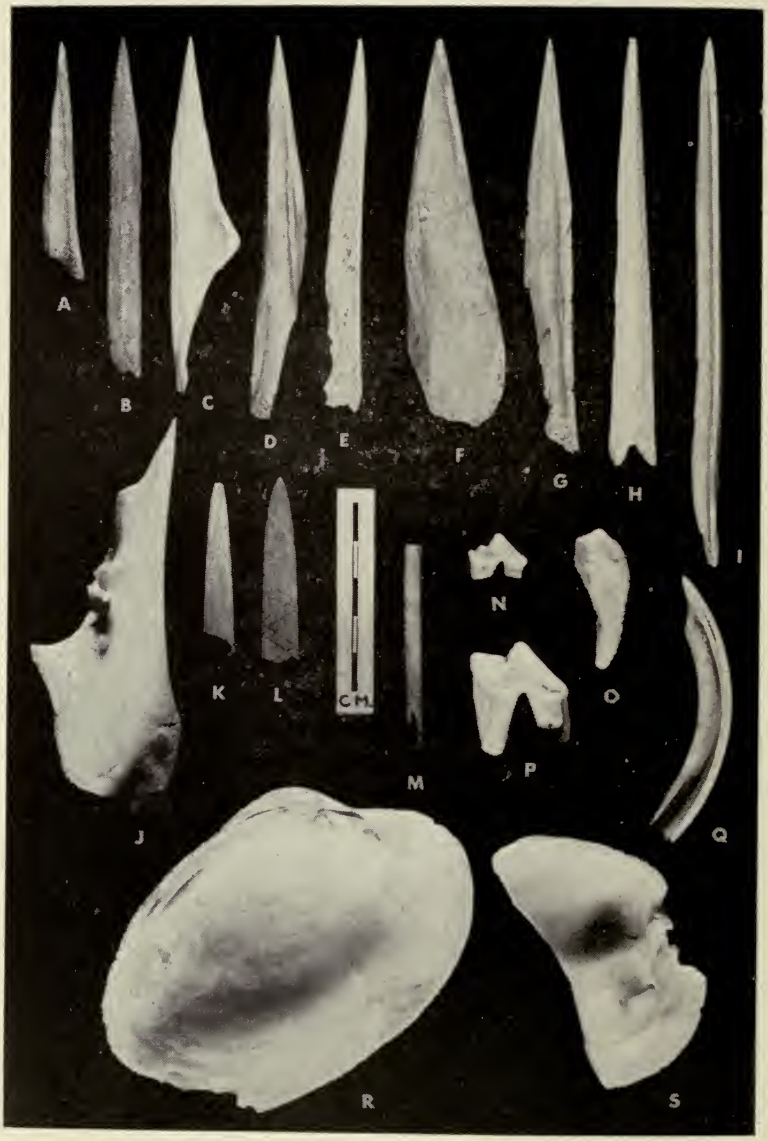


Fig. 7. A-I, split bone awls; J, deer ulna awl; K-L, polished bone awls; M, cut bird bone; N-P, ground wolf teeth; Q, split beaver incisor chisel; R-S, shell spoons.

Bone, Teeth, and Shell Artifacts

Split bone awls. Eleven complete specimens (Fig. 7, A-I) range in length from 64-139 mm., averaging 99.7 mm. A total of 16 were found in the deposit. Most of them appear to be made from portions of deer leg bones.

A deer ulna awl (Fig. 7, J) was found in Level 3. Two polished bone awl tips (Fig. 7, K, L) were found in Levels 4 and 7. One is decorated on one face only by a double zigzag incised design.

Fig. 7, M is a bird bone, cut and ground at one end. The other end is broken.

Two teeth of the right upper jaw of the gray wolf, premolar and carnassial, exhibit grinding on the roots (Fig. 7, N, P). It is apparent that the grinding was done while the teeth were still imbedded in the maxilla. The root of a gray wolf canine tooth (Fig. 7, O) also had been ground down, but rodent gnawing has partially obliterated the ground surfaces. The field notes record another canine tooth from Square D10-disturbed. The drawing indicates it was similarly ground but the specimen was subsequently lost. It seems probable that these teeth are evidence for either trophy skulls or some sort of animal mask similar to, but not exactly the same as, those reported by Webb and Baby (1957:61ff) for the Adena culture of Ohio and Kentucky.

Fig. 7, Q, is a split beaver incisor chisel. The bit shows considerable signs of resharpening.

Turtle shell bowls. None of these were found intact, but a number of pieces with smoothed interiors and smoothed edges indicate their use at this site. Both the Box and Blanding's turtle were used to make bowls. One of the edge fragments of the latter (F12-3-2) had a hole, 3 mm. in diameter, drilled through it, 21 mm. from the edge.

Shell Artifacts

Eight fragments of mussel shell with ground edges represent remains of shell spoons and dishes. Two of these are illustrated in Fig. 7, R. S. Parmalee identified both as Pocketbook (Lampsilis ventricosa). On R the pseudocardinal teeth have been ground down. On S the hinge has been removed.

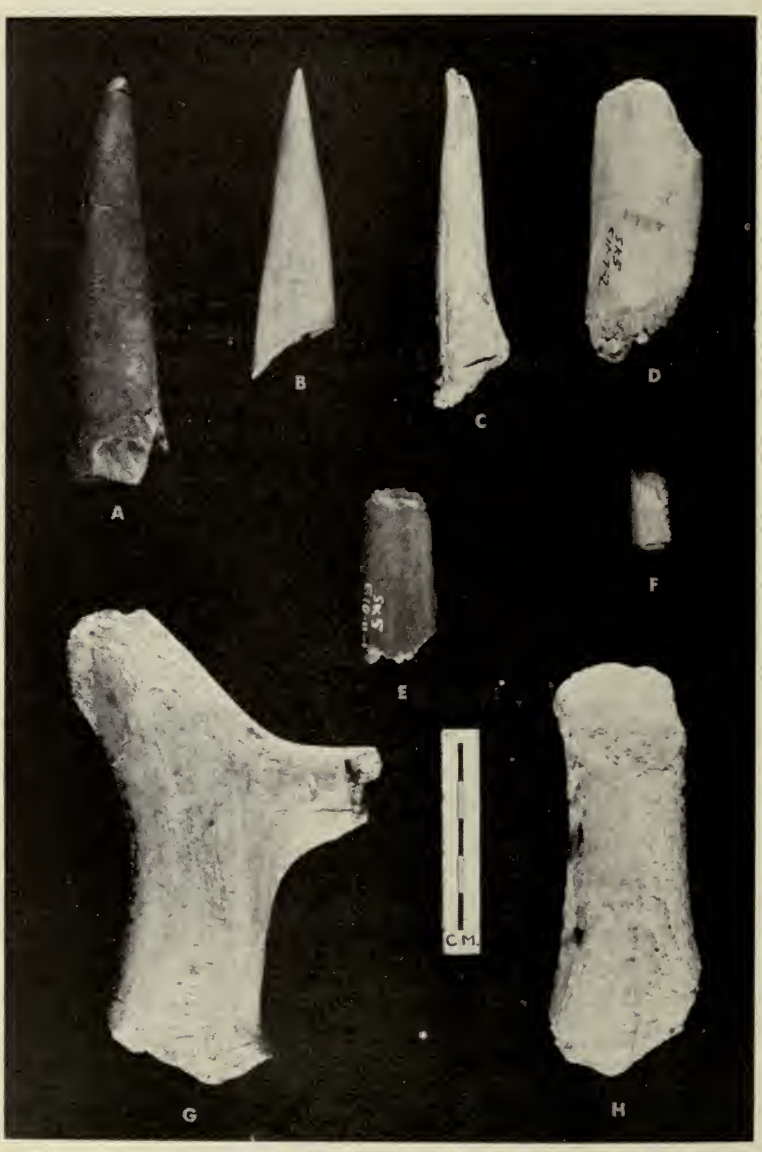


Fig. 8. Antler artifacts: A, flaking tool; B-C, barbed projectile points (D is a waste section); E, cut section; F, drift; G, anvil; H, rubbing tool.

TABLE 1. Frequency of Faunal and Cultural Remains

Level	Faunal Remains (ounces)	Chert Blocks	Chert Flakes	Utilized Chert Flakes	Chert Implement Frags.	Raddatz Side-notched Proj. Pts	Straight-stemmed Proj. Pts.	Corner-notched Proj. Pts.	Durst Stemmed Proj. Pts.	Unclassified Proj. Pts.	Symmetrical Knives	Unclassified Knives	Scrapers	Drill	Ground Stone Frags.	Grinding Stone	Hammerstones	Split Bone Awls	Deer Ulna Awl	Polished Bone Awls	Cut Bird Bone	Ground Wolf Teeth	Split Beaver Incisor Chisel	Turtle Shell Bowl Frags.	Shell Spoon Frags.	Antler Flaking Tools	Barbed Antler Proj. Pts.	Antler Drift	Antler Anvil	Antler Rubbing Tool
1	150	12	11	1	2	–	–	–	–	1	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–
2	319	29	12	1	1	–	1	–	1	1	1	–	1	–	–	–	–	–	–	–	–	–	–	1	2	1	–	–	–	–
3	486	15	7	1	4	–	–	–	3	–	1	1	1	–	1	–	1	2	1	–	–	–	–	4	1	–	–	1	–	–
4	536	18	7	–	1	–	3	–	–	–	–	–	1	–	–	–	–	–	–	1	–	2	–	2	–	1	–	–	–	1
5	856	16	27	1	7	4	–	–	–	2	4	–	–	–	1	–	1	5	–	–	–	–	–	–	2	2	–	–	–	–
6	901	7	30	–	5	16	1	–	–	–	6	1	1	–	–	–	–	3	–	–	–	1	–	2	1	1	–	–	1	–
7	662	7	6	1	5	3	2	–	–	2	1	–	–	–	2	1	1	2	–	1	1	–	1	2	–	1	1	–	–	–
8	340	5	7	1	3	2	–	–	–	1	1	–	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–	–	–
9	189	1	5	3	–	1	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–
10	154	3	2	–	–	2	1	–	–	1	2	–	1	–	–	–	1	1	–	–	–	–	–	1	–	–	–	–	–	–
11	100	2	2	1	3	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
12	78	3	3	1	1	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
13	70	1	3	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
14	48	3	3	3	2	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
15	48	3	7	1	1	–	–	1	–	–	–	–	2	–	–	–	–	1	–	–	–	–	–	3	–	–	–	–	–	–
Below 15	91	–	9	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–
Features	134	4	4	–	–	2	–	2	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1	–	–	–
Disturbed	648	9	12	–	–	–	2	–	–	2	2	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	–
Totals	5810	139	157	16	35	31	11	3	4	10	19	4	8	1	4	1	4	16	1	2	1	3	1	17	8	8	3	1	1	1

Antler Artifacts

Eight antler tines bear evidence on their tips of having been used as flaking implements. The one illustrated (Fig. 8, A) also has a very great number of short incisions on all sides.

Barbed antler projectile points were represented by 1 complete specimen (Fig. 8, B), 1 unfinished specimen (Fig. 8,C), and another by the waste section showing that the barb was formed by the manner in which the point was cut off (Fig. 8 D).

Fig. 8, E, is a section of antler from which the tip had been cut off, possibly to make an antler drift such as Fig. 8, F. The base of the latter is pounded flat and the tip is evidently shattered from use indicating that it had been used in indirect percussion flaking.

The many incisions on the antler section shown in Fig. 8, G, testify to its usage as an anvil, probably in the process of chert flaking. Fig. 8, H, is an antler rubbing tool, the base of which (upper end in the illustration) is worn down at an angle from a rubbing or abrading function.

Quantity and Distribution of Cultural and Faunal Remains

Table 1 and Map 2, respectively, show the vertical and horizontal distributions of the cultural and faunal remains. The map is particularly interesting in that it shows the greatest concentration of both were towards the rear of the shelter. The upper figure within each square is the total number of projectile points found in it. The middle figure is the total of all cultural remains, including all materials listed on Table 1 except the faunal remains which are recorded by the lower figure. The only finished artifacts found north of the G gridline were the two projectile points in H9 and H12; all else consisted of flakes and blocks. The map and the fact that the features and firebeds were also concentrated in the rear demonstrate that most of the occupational activities (at least those activities represented in the archeological record) took place in that area.

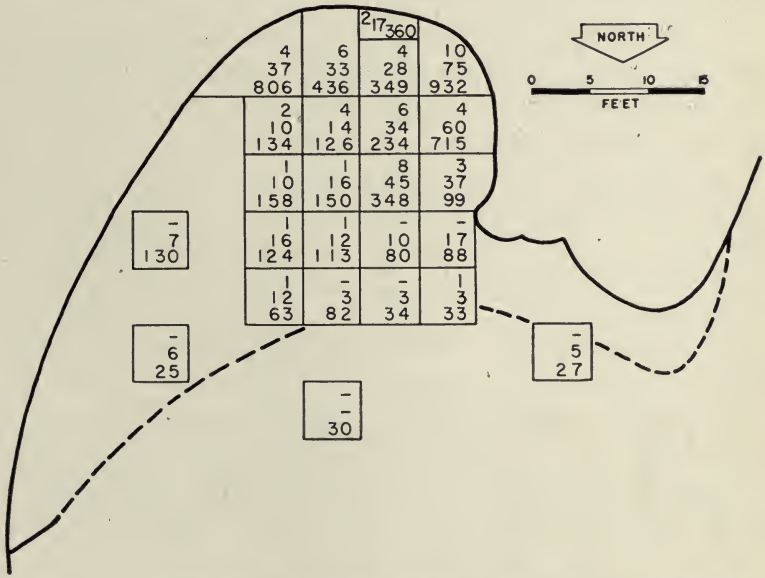
The artifacts represented in quantity have the same patterns of distribution so we cannot distinguish area-wise between

prehistoric activities connected with bone awls, for example, and those related to projectile points.

Over 363 pounds of bone and shell refuse were found in the excavations. Cook and Treganza (1950:254f) have estimated that the original fresh weight of animals would be approximately 20 times the weight of dry, dead bone found at an archeological site. The factor is increased to 40 times to account for the probability that the bones recovered from the site represent only a portion of the animal food actually brought to the site by the inhabitants. Although their calculations are based on California sites where the types and relative proportions of the species utilized would vary from those of the Raddatz site, a crude estimate might be made that a minimum of 10,000 pounds of meat and other edible animal materials were consumed by the Archaic inhabitants at this site.

Radiocarbon Dates

Of a total of 4 samples of charred wood submitted for radiocarbon assay, one (M-496), collected in the 1955 test pit,



Map. 2. Distribution of projectile points (upper figure), total artifacts (middle figure), and faunal remains in ounces (lower figure).

was too small to run. The remaining 3 samples, collected in 1957, were processed at the University of Michigan Memorial-Phoenix Project Radiocarbon Laboratory under the direction of Prof. H. R. Crane. The dates were secured through the cooperation of Dr. James B. Griffin, Director of the Museum of Anthropology, University of Michigan (person correspondence, 1958, 1959).

Sample M-784 was collected from Level 6 (Stratum D) in the northeastern corner of Square D10. The charcoal was in an ash lens, 1.9 feet below the surface, and at least 1.0 foot below any signs of disturbance. Two Raddatz points (Fig. 3, H, W) were found in this lens and another (Fig. 3, J) was found at the same depth about a foot away. The date obtained is 1,380 + − 200 years ago (578 A. D. + − 200 years). * Although the field evidence indicated that the sample was definitely associated with the major occupational zone of the site, characterized by a preponderance of Raddatz points, this radiocarbon date is far too recent. The actual date of Level 6 should be considerably earlier. This question will be more fully discussed below.

Sample M-812 was charred wood from a surface dept of 7.5 feet in Square G10. It was contained in Stratum R of Black's geological analysis. The date of the sample is 11,611 + − 600 year ago or 9,652 B. C. + − 600 years.

Sample M-813 was contained in Fea. 3, a large pit which originated at a surface depth of 3.0 feet (boundary between Levels 9 and 10), and which extended 1.4 feet below this. The sample was collected from a surface depth of 4.3 feet in that portion of the pit which was in Square D10. The radiocarbon date of 5,200 + − 400 years ago (3,241 B. C. + − 400 years) applies to the level of the pit's origin.

Discussion. The dates of Samples M-812 and M-813 were determined after Black had completed the geological analysis and had made his tentative correlations of the deep deposits with late Cary and possibly earlier events (Strata S, T, U), the Two Creeks interstadial (Stratum R), and the Valders

* This date has been published by Crane and Griffin 1959:178.

substage (Stratum Q). The 9,652 B. C. radiocarbon date of R is in accordance with his interpretation (radiocarbon dates obtained so far indicate that the Valders ice advanced over northeastern Wisconsin a little over 9,400 B. C. and probably reached its maximum extent near Milwaukee about 9,000 B. C.). The 3,241 B. C. radiocarbon date of Fea. 3 further supports his assignment of a minimum date of 3,000 B. C. to Stratum F, the level of the pit's origin. If we assume that the deposit accumulated at a relatively uniform rate, as did Black when he made the correlations with geological events, the difference in depth between the levels of M-812 and 813 dates would indicate that the rate of deposition was approximately 1.0 foot in 1,425 years.

Interpretations

From the data presented above and in the accompanying papers by Robert F. Black and Paul W. Parmalee we may draw a number of interesting and significant interpretations. The earliest positive evidence of human occupation in this rockshelter was noted on the upper surface of Stratum O in Square H9, at a surface depth of 7.0 feet. At this point there was a well defined firebed containing charred split animal bones and 9 flakes of basaltic rock which had to be carried into the shelter. Since no artifacts of a diagnostic character were found at this early level, nothing can be said regarding the cultural affiliations. The date for these remains should be approximately 8,000-9,000 B. C.

Small fragments of charcoal were found in Strata O through T, below the first definite evidence of occupation. A quantity sufficient for radiocarbon assay was collected from Stratum R. Although no artifacts of any kind were present in these strata, it is possible that some of this charcoal resulted from fires built by man rather than forest fires of natural origin. Thus, there is a possibility of man's presence in the area 12,000 or more years ago.

The earliest distinctive artifacts consist of a cut antler tine which is probably an unfinished barbed antler projectile point (Fig. 8, C) and a heavy side scraper (Fig. 6, G). On the basis of depth these two artifacts would date approximately 7,500 B. C.

Artifacts from Level 15, about 6,000 B. C., include a fragment of a corner-notched projectile point (Fig. 4, J), a split bone awl, 2 small scrapers (Fig. 6, K, L), and 3 frgaments of a bowl made from the Box Turtle. An oval knife (Fig. 6, D), found in the 4.0-5.0 foot level is made of the same variety of local chert as the heavy side scraper (Fig. 6, G) of deeper occurrence. None of the other artifacts from this site are made of the same variety.

Stratum I corresponded to Level 12 and could be traced over the area of excavations beneath the overhang. On the basis of depth, it should date approximately 4,500 B. C. This would be approximately the beginning of the warm period variously called the Altithermal, Thermal Maximum, Xerothermic, and Post Glacial Optimum, and which lasted until about 2,000 B. C. (Quimby 1954, Fowler 1959). Climate was hotter and drier than at present. Prairie reached their maximum extent in Wisconsin, but it appears that the locale of the Raddatz site was wooded according to the types of faunal remains present in the deposit (see Parmalee's paper). Level 12 contained the oval knife shown in Fig. 6, C, and the projectile point shown in Fig. 3, X. Although the latter has been classified as a Raddatz point, it bears a strong similarity to the Osceola and Hemphill types mentoned above. It is perhaps not without interest that it was the deepest of the side-notched points at this site.

Feature 3, originating in Stratum F (Level 10), produced a radiocarbon date of 3,241 B. C. This feature contained 2 of the thin, broad corner-notched points and a barbed antler projectile point. As shown on Table 1, this horizon also contained a number of other artifacts.

Level 6 (Stratum D) according to depth should date at approximately 1,800 B. C. The radiocarbon date of 578 A. D. on charred wood from this layer does not fit in with the other dates from this site or with present interpretations of the Archaic in the Midwest.

The major Archaic occupations occurred during the deposition of Levels 12 through 5 (Strata I through D). These zones encompass the period of the Altithermal. Characteristic artifacts include Raddatz and straight-stemmed projectile points,

symmetrical ovate knives, side scrapers, the T-shaped drill, split bone awls, barbed antler projectile points, and others as shown on Table 1. I would designate these materials as Middle Archaic in the Wisconsin area.

In this rockshelter and at the Durst and Gov. Dodge State Park rockshelters (Wittry 1958) the Durst Stemmed type of projectile makes a rather sudden appearance which I have interpreted as marking the beginning of the Late Archaic times in this area. A definite continuity in culture from Middle to Late Archaic is indicated by the survival of artifact forms of the former into the latter.

The importance of the Raddatz site is in the fact that it is a stratified occupation site of the Archaic Period. It was also inhabited during the Woodland Period, but, unfortunately, the upper sections of the deposit containing these remains were removed sometime in the late Nineteenth Century. An analysis of the Durst rockshelter which also had been occupied in both Archaic and Woodland times showed that the Archaic peoples made a much more intensive use of the site than the Woodland groups who also utilized it primarily as a hunting station (Wittry 1958). The Archaic zone at the Durst site contained significantly greater proportions of knives, scrapers, broken chert implements, flakes, etc., relative to the number of projectile points than were present in the later Woodland zones. Preservation of both bone artifacts and animal bone refuse was poor in the Archaic zone at the Durst site, in contrast to the excellent preservation at Raddatz, but the relative proportions of chipped stone implements are comparable. An exception is in the number of chert flakes. At the Durst site the ratio of flakes to points is 55 to 1, at Raddatz it is less than 3 to 1. Thus, there is a minor difference in the Archaic horizons of the two sites in that a great deal more manufacturing of chert implements took place at Durst. *

Both sites were probably seasonal camps and such indications as are available support the idea that most of the visits

* At Gov. Dodge State Park rockshelter the ratio was 175 chert and quartzite flakes per projectile point, indicating an even greater amount of workshop activity.

were made in late winter. Grinding stones which would indicate use of vegetable foods available in the summer and fall are lacking except for one possible specimen. Male deer skulls found in the deposit were generally in the antlerless condition. Wisconsin deer usually drop their antlers in January. The complete lack of fish remains and the relative paucity of mussels, reflect little activity when these foods have been collected. Of interest also is the complete absence of both bear and bison remains. It is possible that these animals were not hunted or that the sites were occupied during the season when bears were hibernating and the bison had migrated south. Bears were certainly in the area but the site is very close to the edge of the range for bison in Wisconsin as it has been determined by Schorger (1937). Bison bones were found in the burial layer of the Osceola cemetery (Ritzenthaler 1946:64). The very rare occurrence in the deposit of waterfowl remains and other evidence discussed in Parmalee's paper also indicate a preponderance of winter visits, although apparently some summer trips were also made. Evidence that the bulk of the occupational activities took place in the rear of the shelter, presented above, indicates that the fires were utlized for warmth as well as cooking.

Raddatz points comprise over 50% of the total number from the site. Together with straight-stemmed points, the distribution of which indicates contemporary use, they represent over 70% of the total. Over 80% of the knives were of a single type and similar situations are true of other categories of artifacts although the numbers are relatively few. There is good stratigraphic evidence to indicate that some of the typological variations are due to temporal factors, such as the late occurrence of Durst points and the early occurrence of the small scrapers. If only Levels 4 through 12 of the deposit were considered, the variation in types would be reduced. This homogeniety in material culture can be interpreted in two ways. It is probable that the nature of the remains is due to the fact that the site is a seasonal hunting station and thus contains only a limited range of artifacts connected with these activities.

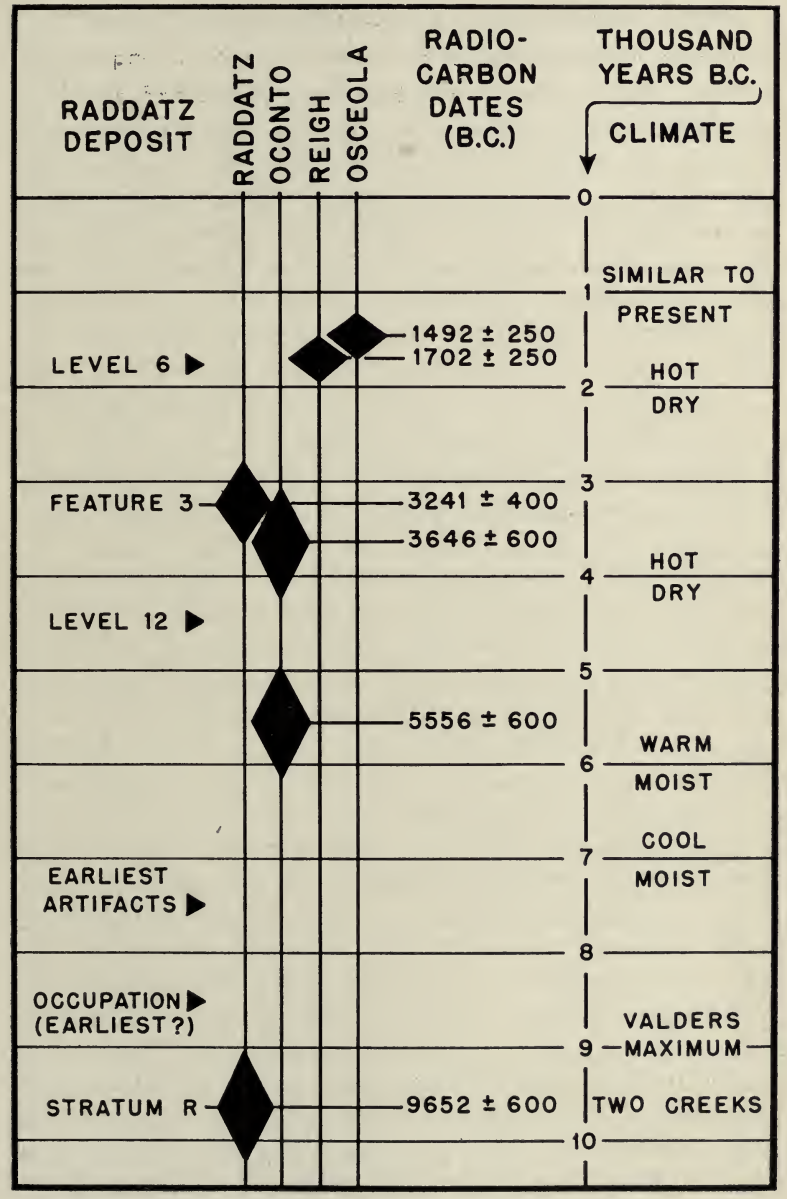


Fig. 9 Raddatz site deposit, Wisconsin Archaic radiocarbon dates, and climate. Oconto dates from Wittry and Ritzenthaler, 1956. Reigh and Osceola dates from Ritzenthaler, 1958. Climate after Fowler, 1959, and Quimby, 1954.

Another interpretation, not conflicting with the first, is that the area was dominated by a single group for a long period of time. While it is possible that some unclassified artifacts, especially in the categories of projectile points, knives, and scrapers, may represent functional differences, it is also possible that their presence at the site is due to visits by other cultural groups. The bulk of the evidence, however, indicates that this site was utilized by a single culture for a long time during the Archaic Period. Similar evidence has been obtained from other rockshelter sites in the Driftless Area (Wittry 1958).

If the above is true, it has some interesting implications in regard to the archeology of the Wisconsin area. Previous to this data, the best known Archaic culture in Wisconsin was Old Copper. Radiocarbon dates indicate that it was contemporary with the Archaic occupation of the Raddatz site (Fig. 9). But our knowledge of Old Copper is similarly restricted and represents only a portion of the total culture (even in the archeological sense) because the information is derived primarily from the excavation of burials and distribution studies of surface finds (Wittry and Ritzenthaler 1956). Additional discoveries at the Reigh site have produced much stronger evidence for classifying this site as Old Copper, albeit a relatively late phase (Ritzenthaler and others 1956). With Osceola and Oconto, there are three partially excavated Old Copper cemeteries. The difficulties of comparing the data of the Raddatz rockshelter with these cemeteries should be readily apparent. At the Raddatz rockshelter, other rockshelters, and also sites in open country, artifacts and debris connected with "living" are found, whereas in the cemeteries burial customs and grave goods connected with "dying" are found. It is even difficult with present data to compose a comparative trait list only for the three cemeteries because of the limited number of artifact types present. Such differences as exist in similar categories of artifacts between the cemeteries may be due to temporal factors, such as the later manifestations being influenced to a greater degree by cultures outside the Old Copper area.

Raddatz Side-notched projectile points are very similar to Osceola Points. Although it is possible that the larger size of some of the Osceola Points is due to different function, e. g., daggers instead of projectile points, the size and more carefully executed flaking may indicate that they were made especially to accompany the dead. Presumably, only utilitarian specimens occur at the habitation sites.

The side-notched projectile points and knives from the Reigh site are sufficiently different in width-length ratio (wider), the form of the base (usually convex), and the type of notching (smaller, closer to the base) that they cannot be classified within the Raddatz type.

Thus, it is with a minimum of supporting evidence that I suggest a cultural relationship between the Archaic occupation of the Raddatz site and Old Copper. It seems possible that the former represents an occupational site of the Old Copper culture, previously known only through the excavation of cemeteries and surface finds. To my knowledge only one copper implement has been found in Wisconsin rockshelters. This is the base of a projectile point (Type I-G2) and was found in a crack in the bedrock of the Knoop rockshelter, Sk3. The deposit at this point was 34 inches thick. Although good stratigraphy was lacking, other Archaic remains were found and the spearpoint fragment is obviously one of the earliest artifacts left at the site (Wittry 1958:110). A copper awl was found in the 15-16 foot level of the Modoc rockshelter in southern Illinois. At Modoc, side-notched projectile points, very similar to the Raddatz type, have been found through out the Archaic portion of the deposit, the earliest being in the deepest level at 26-27 feet. They are most abundant in the 10-15 foot zone, especially in the 10-11 foot level. The radiocarbon date of 3,325 B. C. + − 300 years on the latter level and other dates from Modoc indicate contemporaneousness with the use of Raddatz points in Wisconsin. But it is apparent that they do occur at earlier times at Modoc (Fowler 1959).

If the Raddatz rockshelter is representative of a specialized kind of seasonal occupational site as the evidence seems

to indicate, it would be logical that there should be other Archaic sites in the open, near sources of water and summer and fall foods, that were occupied during these seasons. Although a few Archaic sites of this nature have been reported in Wisconsin, the lack of faunal remains due to poor preservation conditions, mitigates this type of interpretation. Raddatz and other rockshelters are limited to the Driftless Area. No doubt some sort of artificial shelters were utilized by Archaic groups in other parts of the state and in the Driftless Area as well.

REFERENCES CITED

BAERREIS, DAVID A. 1953. The Airpark Village Site, Dane County (Da2). **The Wisconsin Archeologist,** n. s., Vol. 34, No. 3, pp. 149-164.

BELL, ROBERT E. 1958. Guide to the Identification of Certain American Indian Projectile Points. **Special Bulletin No. 1 of the Oklahoma Anthropological Society,** Oklahoma City.

COLE, FAY-COOPER, and THORNE DEUEL. 1937. **Rediscovering Illinois.** The University of Chicago Press.

COOK, S. F., and A. E. TREGANZA. 1950. The Quantitative Investigation of Indian Mounds. **University of California Publications in American Archaeology and Ethnology,** Vol. 40, No. 5.

CRANE, H. R. and JAMES B. GRIFFIN. 1959. University of Michigan Radiocarbon Dates IV. **American Journal of Science Radiocarbon Supplement.** Vol. 1, pp. 173-198.

FOWLER, MELVIN L. 1957. Archaic Projectile Point Styles 7,000-2,000 B. C. in the Central Mississippi Valley. **The Missouri Archeologist,** Vol. 19, Nos. 1-2, pp. 7-20.

————. 1959. Modoc Rock Shelter, an Early Archaic Site in Southern Illinois. **American Antiquity,** Vol. 24, No. 3, pp. 257-270.

QUIMBY, GEORGE I. 1954. Cultural and Natural Areas Before Kroeber. **American Antiquity,** Vol. 19, No. 4, pp. 317-331.

RITZENTHALER, ROBERT E. 1958. Some Carbon 14 Dates for the Wisconsin Old Copper Culture. **The Wisconsin Archeologist,** n. s., Vol. 39, No. 3, pp. 173-4.

————. 1946. The Osceola Site, an "Old Copper" site near Potosi, Wisconsin. **The Wisconsin Archeologist,** n. s., Vol. 27, No. 3, pp. 53-70.

————, and others. 1956. Reigh Site Report — No. 3. **The Wisconsin Archelogist,** n. s., Vol. 37, No. 4, pp. 97-129.

SCHORGER, A. W. 1937. The Range of the Bison in Wisconsin. **Transactions of the Wisconsin Academy of Sciences, Arts, and Letters,** Vol. 30, pp. 117-130.

SCULLY, EDWARD G. 1951 Some Central Mississippi Valley Projectile Point Types. Museum of Anthropology, University of Michigan. Mimeographed.

WEBB, WILLIAM S., and RAYMOND S. BABY. 1957. **The Adena People No. 2.** The Ohio State University Press.

WITTRY, WARREN L. 1958. Archeological Studies of Five Wisconsin Rockshelters. Ph. D. Dissertation, University of Wisconsin.

————, and ROBERT E. RITZENTHALER. 1956. The Old Copper Complex: An Archaic Manifestation in Wisconsin. **American Antiquity,** Vol. 21, No. 3, pp. 244-254.

APPENDIX: KEYS TO FIGURES 3-8

Note: The provenience of specimens is disclosed by their catalog numbers as in the following example: D12-6-3 shows that this is specimen number 3 from Level 6 of Square D12. Abbreviations used: Fea. for Feature; Dist. for Disturbed; and BG indicates basal grinding. All measurements are in mm., () indicates an estimated dimension.

FIG. 3 Raddatz Side-notched Projectile Points.

No.	Cat. No.	Length	Width	Stem Length	Thickness	
A	D12-6-3	—	22	11	9	BG
B	E12-6-1	—	27	10	8	
C	E10-10-1	38	22	11	8	
D	D12-7-1	45	16	10	8	
E	E12-5-1	50	25	12	9	BG
F	D12-6-2	54	26	15	10	BG
G	D12-9-1	—	27	13	11	BG
H	D10-6-1	—	26	15	8	BG
I	Fea. 7-1	65	30	16	9	BG
J	D10-6-4	53	26	12	9	BG
K	E11-6-1	(64)	28	14	9	BG
L	D12-6-1	45	26	13	7	BG
M	F11-6-1					
	F11-7-1	(47)	22	9	7	BG
N	F11-6-2	41	28	13	8	BG
O	E-12-6-2	(41)	26	17	10	BG
P	H12-7-1	—	27	12	9	BG
Q	D9-10-1	—	28	15	7	BG
R	D11-5-2	—	—	—	—	BG
S	D9-8-1	—	26	12	9	BG
T	D10-8-1	—	24	8	—	
U	Fea. 1-2	—	—	—	—	BG
V	E11-6-2	—	29	17	9	BG
W	D10-6-2	—	26	16	9	BG
X	F11-12-1	—	34	13	8	BG

FIG. 4. Projectile Points

No.	Cat. No.	Length	Width	Stem Length	Stem Width	Thickness	
A	D9-10-2	50	22	17	18	8	
B	H9-7-1	—	—	18	18	10	
C	D9-Dist.	58	22	20	18	9	
D	E11-4-1	—	25	18	20	9	
E	F11-5-2	45	22	18	18	8	
F	G9-7-1	—	24	17	22	10	
G	F9-6-1	43	21	17	19	7	
H	Fea. 3-4	51	36	9	—	6	
I	Fea. 3-1	—	—	—	—	—	
J	G10-15-1	—	—	—	—	—	
K	D12-3-1	(43)	23	13	13	6	BG
L	F11-2-1	(47)	19	12	14	7	BG
M	D12-3-2	38	19	13	14	6	BG
N	C11-2-1	37	30	8	—	6	
O	E11-8-1	44	24	—	—	10	
P	E11-1-1	44	27	15	—	10	BG
Q	F11-5-4	(54)	25	11	—	8	

R	D12-10-1	37	22	7	—	6	BG
S	D11-5-1	—	30	20	—	9	
T	E10-7-1	41	30	8	—	5	BG
U	D12-7-2	—	—	14	—		BG
V	E9-Dist.	73	27	26	—	11	
W	D10-Dist.	64	31	19	—	8	

FIG. 5. Symmetrical Knives

No.	Cat. No.	Length	Width	Thickness
A	F11-3-1	66	28	8
B	F9-10-2	62	35	11
C	D12-5-1	68	32	17
D	D11-6-1	66	28	10
E	E11-6-4	72	35	15
F	D12-4-2			
	G10-5-1	71	33	10
G	D10-Dist.	75	34	13
H	E11-6-3	67	33	10
I	D11-6-2	79	32	13
J	E12-5-2	77	35	16
K	F10-5-1	48	27	10
L	D12-6-5	54	25	9
M	E9-7-1	54	27	10
N	D10-Dist.	52	28	10
O	D12-6-6	64	35	8

FIG. 6. Knives, Scrapers, Drill

No.	Cat. No.	Length	Width	Thickness
A	C11-6-1			
	F11-5-3	102	42	10
B	D12-6-7	112	45	20
C	Fea. 6-1			
	E11-12-1	73	45	7
D	E12-13,14,15-1	80	63	12
E	D12-3-9	79	29	15
F	C11-2-2	75	45	20
G	F9-18-1	57	38	17
H	D10-6-3	41	28	7
I	E12-10-1	47	39	10
J	D9-4-27	36	20	8
K	G11-15-1	28	22	5
L	G12-15-1	28	27	5
M	E10-9-1	69	25	9

FIG. 7. Bone, Teeth, Shell

No.	Cat. No.	Length	Width	Thickness
A	E12-6-4	(64)	11	3
B	G7-10-1	90	9	3
C	F10-8-1	95	18	3
D	D12-5-2	101	12	3
E	D10-6-5	99	12	5
F	D12-7-4	102	25	4
G	D12-7-5	109	12	3
H	D11-5-4	113	12	4
I	G12-3-1	(139)	9	8
J	D12-3-10	105	34	22
K	G12-4-1	48	8	4

L	F9-7-1	50	10	4
M	G9-7-4	57	4	4
N	D12-4	15	6	12
O	D12-4	37	13	8
P	D10-6	24	13	28
Q	E12-7-3	70	6	8
R	D9-5	114	73	—
S	D9-Dist.	—	—	—

FIG. 8. Antler

No.	Cat. No.	Length	Width	Thickness
A	D11-6-4	114	26	19
B	Fea.3-3	82	21	15
C	G9-18-1	90	20	17
D	C11-7-2	72	30	—
E	E10-11-1	46	21	—
F	F11-3-1	26	10	—
G	E10-6-1	126	77	25
H	F11-4-1	116	38	30

GEOLOGY OF RADDATZ ROCKSHELTER, Sk5, WISCONSIN *

Robert F. Black
University of Wisconsin

Raddatz Rockshelter, Sk5, was carved by a combination of weathering and erosional processes from sandstone of Croixan or upper Cambrian age. The top of the natural bridge, above the shelter, is at or close to the top of the Franconia formation of the Croixan series. That formation is about 120 feet thick, but neither top nor bottom contacts are visible at the site. The bulk of the deposits within the shelter, containing the archeological remains, are derived from the Franconia and younger formations that make up the hill to the northwest of the shelter. In order to appreciate the problems of interpretation of those deposits, from which rocks they were derived, how they were transported to and deposited in the shelter, and what conditions were like when they were being laid down, it is necessary to review briefly the characteristics of the Franconia and younger formations.

The following remarks are based on the available literature, the writer's field notes taken on two half-day visits to the site,

* Study financed by the Wisconsin Alumni Research Foundation.

and on the study of samples from one deep pit (profile F12-G12) in the northwest part of the shelter. Factual data are presented first; their interpretation follows. It is assumed that the reader has assimilated the material presented by Warren L. Wittry in the preceeding paper, and the general setting, topography, and other information will not be repeated.

Bedrock

Wanenmacher (1932) mapped and described the bedrock geology of the Baraboo region, including (p. 47-50) the Leland-Denzer area, but he did not specifically mention the natural bridge or shelter. His observations were summarized and published by Wanenmacher, Twenhofel, and Raasch (1934). History of classification and subdivision of the Franconia formation is long and complicated (Trowbridge and Atwater, 1934, p. 45-50; and Berg, 1954) as is that of the upper Croixan (Nelson, 1956), and they are not discussed here. Early subdivision of the Franconia formation into four members was based largely on fossils (Twenhofel, Raasch, and Thwaites, 1935, p. 1697-1705). However, no diagnostic fossils were seen at the shelter, and much of the Franconia is unfossiliferous. Berg (1954) subdivided the formation into five members, on the basis of rock type, with the Mazomanie member interfingering and deposited contemporaneously with part of the youngest or Reno member of the sequence. In the Baraboo area, according to Berg (1954, p. 875), the upper 25 feet of the Reno member of the Franconia covers the Mazomanie member. If this interpretation is correct, the natural bridge is carved from the Reno member of the Franconia formation, and the shelter below is in the Mazomanie member.

In the hill rising to the northwest above the shelter successively younger rocks are poorly exposed; these were mapped by Wanenmacher (1932) as the Trempealeau formation and Madison sandstone of upper Cambrian age and the Oneota formation of Ordovician age. According to Berg, Nelson, and Bell (1956) and to Nelson (1956), the Franconia boundary should be raised to include part of the Trempeleau, the rest of the Trempealeau should be called the St. Lawrence and Jordan formations, and the Madison sandstone should be

called the Sunset Point formation. Thus, in brief, the shelter is in the Mazomanie member and the overlying bridge in the Reno member of the Franconia formation, and successively younger formations in the adjacent hill are the St. Lawrence. Jordan, Sunset Point, and Oneota.

The general characteristics of those formations are known. but no detailed studies have been attempted in the vicinity of the shelter. Because of the lack of exposures of the St. Lawrence and younger formations in the hill above the shelter, detailed studies for this report were not practical.

The Mazomanie member (Berg, 1954, p. 866-867) of the Franconia formation is a quartz sandstone with appreciable amounts of garnet, tourmeline, and zircon, and minor amounts of magnetite, dolomite, feldspar, and other minerals (Pentland, 1931; Becker, 1931; Wanenmacher, Twenhofel, and Raasch, 1934). The bulk of the quartz grains are rounded to subangular and fall into the fine- to medium-grained sand sizes. Calcite and dolomite cement individual grains together. The sandstone is characterized by the absence or at least the rarity of glauconite (a green hydrous aluminum silicate of potassium, magnesium, and iron), white to light yellow color, and thin nearly horizontal bedding planes with much cross-stratification. Locally at the shelter the sandstone contains fragments of pink, red, or purple quartzite from the Baraboo formation of Precambrian age. These fragment are well-rounded to angular, range in size from coarse sand to pebbles, and were derived from the area of outcrop of the Baraboo quartzite to the north about 460 million years ago when the Croixan sands were being deposited near shore in shallow, warm, marine waters.

The Reno member of the Franconia is characterized by hard and soft layers of sandstone and consequent variability of resistance to weathering and erosion, by uniformity of sorting of its quartz sand into fine- to medium-grained sizes, and the presence of abundant glauconite. In some beds the glauconite makes up more than 20 percent of the total rock; such beds are called "greensands" (Twenhofel, 1936). At the bridge the Reno member also contains numerous fragments of quartzite from the Baraboo Range. The quartzite pebbles and cobbles

weather out in relief as sand grains break away by solution and frost action. Marked bedding planes a few inches apart also stand out in relief on the weathered surface of the natural bridge and its supports. Small- to medium-scale cross-stratification may be seen in a small area in sets of strata which locally are essentially horizontal, but which have a regional dip to the south and southwest away from the Baraboo Range. Cylindrical structures reveal the work of abundant boring and burrowing organisms that lived in the ancient sea. Garnet, tourmeline, zircon, and other minerals similar to those in the Mazomanie member are present (Pentland, 1931). Individual sand grains are cemented mostly with calcite and dolomite, but ferric oxide and silica from weathered glauconite are present. Colors of yellow, brown, green, and red are common to small areas.

The St. Lawrence formation consists generally of sandy dolomite and dolomitic siltstone perhaps 25 feet thick (Berg, Nelson, and Bell, 1956, p. 11); the lower beds are especially sandy and glauconitic (Wanenmacher, 1932, p. 18). Thin-bedded impure dolomite a few feet thick crops out on the ridge due north of Leland, but it was not seen in the hill above the shelter. Possibly the St. Lawrence directly above the shelter is largely sandstone with glauconite that is indistinguishable, when weathered, from the Reno member of the Franconia formation. The St. Lawrence consists entirely of sandstone in other places (Wanenmacher, 1932, p. 21).

The Jordan formation also consists of medium-grained sandstone with local silty seams; it is not exposed above the shelter, but is estimated to be 25-50 feet thick. It contains very little glauconite; the dominant heavy mineral is garnet. The Sunset Point formation consits of dolomitic medium-grained sandstone that is estimated to be 10-20 feet thick. Garnet is the dominant heavy hineral (Wanenmacher, Twenhofel, and Raasch, 1934, p. 26). The contact with the Jordan formation is not exposed, and the two formations are not easily separated (Wanenmacher 1932, p. 25). The overlying Oneota formation consists locally of hard, gray, dense dolomite that is resistant to erosion and cap ridges, but it grades into very sandy facies of thin-bedded dolomites that are not resistant to

Fig. 1. Stratigraphic section (F12-G12) of Raddatz Rockshelter, Sk5, looking west at the northwest edge of the shelter. Five-foot scale. Photo by Warren L. Wittry.

erosion. The minerals in the basal portion of the Oneota are essentially those of the Franconia and upper Croixan formations (Wanenmacher, Twenhofel, and Raasch, 1934, p. 27).

Thus, in summary, the Franconia and younger formations in the vicinity of the shelter are largely sandstones of fine- to medium-grained quartz; some beds are characterized by abundant glauconite, but others lack glauconite. Garnet is the dominant heavy mineral of all formations. The environment of deposition and history of each formation are so familiar that marked differences in the local section are not found or are not significant even though regional differences are diagnostic.

Shelter Deposits

The shelter deposits containing the archeological remains consist mostly of well-sorted quartz-rich sand of fine- to medium-grained sizes and of fragments of sandstone comprised of such sand not yet disaggregated. The entire section is calcareous; oxidation is not pronounced. A typical section and the only one studied in detail by the writer is shown in Figure 1; details of the section are tabulated in Table 1. Strata G and H were not separable in this particular section and are not lettered in Figure 1; Strata T and U fall below the bottom of the pit shown in Figure 1. Even though the section shown in Figure 1 is at the northwest corner of the shelter, it represents, according to Wittry, the same stratigraphic horizons as are found elsewhere in the shelter. A rapid binocular microscope examinatin of samples collected by Wittry from the center of the shelter revealed no significant differences except erratic distribution of glauconite. Rather than repeat facts common to all horizons, only variations are cited in Table 1. Details are lacking for some horizons, because no samples are available for microscopic study. Specific colors are for air-dried samples, following the Munsell Soil Color Chart. Snail shells are common in upper levels (see article by Parmalee in this bulletin), but they were not seen below stratum I (no sample are available for Strata J, K, L, M, and N, so the actual appearance of snails in this particular section of the deposits cannot be pinpointed). However, Wittry collected samples from the center of the shelter which represent that interval. Snails appear first in Stratum K.

TABLE 1

A—0.5-1.1 foot thick. Pale brown (10 YR 6/3)*; recent alluvium disturbed by modern man; base irregularly contorted; glauconite absent; silt up to 5 percent; charcoal common; quartzite and sandstone rare.

B—0.1-0.3 foot thick. Yellowish brown (10 YR 5/4), pinches out to north, towards mouth of shelter; glauconite rare; silt 1 percent; charcoal and marine shell fragments common.

C—0.4-0.5 foot thick. Upper part very dark grayish brown (10 YR 3/2); glauconite rare; up to 5 percent silt; charcoal rounded; iron stained locally. Lower part yellowish brown (10 YR 5/4); glauconite abundant; silt 1 percent; charcoal angular.

D—0.5 foot thick. Upper part dark gray (10 YR 4/1); glauconite rare; silt 5 percent; much charcoal and bone; disintegrated diorite erratic. Lower part light yellowish brown (10 YR 6/4); glauconite common; silt less than 1 percent; some angular charcoal; much secondary carbonate; numerous sandstone and quartzite fragments.

E—0.6-0.9 foot thick. Upper part very pale brown (10 YR 7/4); glauconite common; silt less than 1 percent; quartzite pebbles present; marine shell fragments and angular charcoal present. Lower part yellowish brown (10 YR 5/4); glauconite common; silt 1 per cent; some charcoal, but less locally than in other parts of shelter.

F—0.2-0.3 foot. Yellowish brown (10 YR 5/4) to black; pinches out to west; glauconite absent; silt 5 percent; much secondary carbonate in tubes and irregular masses; much charcoal and iron oxide.

G and H—0.8-0.9 foot. Very pale brown (10 YR 7/4); not separable here as in other parts of shelter; glauconite abundant; silt less than 1 percent; charcoal rare.

I—0.1-0.2 foot. Upper part light brownish gray (10 YR 6/2) mottled with weak red (10 R 5/3); glauconite absent; silt 5 percent; much secondary carbonate in tubes and irregular masses; iron oxides and charcoal abundant and give mottled effect. Lower part yellowish brown (10 YR 5/4); much charcoal and secondary carbonate; glauconite present; silt up to 3 percent. Snails are common here and in above horizons.

J—0.9 foot. Yellowish brown; charcoal rare.

K—1.0 foot. Alternating yellowish brown and pale brown.

L—0.4-0.6 foot. Very pale brown.

M—0.3-0.4 foot. Yellowish brown.

N—0.3 foot. Very pale brown.

O—0.1 foot. Grayish brown (10 YR 5/2) and very pale brown (10 YR 7/4); traceable across shelter; glauconite rare; silt 3 percent; much secondary carbonate cement and charcoal; no snails here or in horizons below.

P—0.3 foot. Very pale brown (10 YR 7/4); mottled; glauconite rare; silt 2 per cent; charcoal common locally.

Q—0.1-0.2 foot. Light gray (10 YR 7/2); thickens to center of shelter and truncates horizons below; glauconite very rare; silt and clay about 50 percent; some mica; much charcoal and secondary carbonate.

R—0.4-1.2 foot. Very pale brown; mottled; truncated by horizon Q; dips north 10-15 degrees; thickens to center of shelter where it is a predominantly charcoal zone with much iron oxide.

S—0.2-0.6 foot. Pale yellow (2.5 Y 7/4); much contorted and tilted 15-20 degrees north; glauconite very rare; silt, slightly coarser

than that in Q, about 60 percent; heavy minerals rare; some secondary carbonate; small angular bits of charcoal.

T—2.0 plus feet. Pale yellow (2.5 Y 7/4); contorted darker streaks with silt and charcoal dip north 15-40 degrees; glauconite very rare; silt 1 percent in cleaner parts and over 10 percent in narrow streaks; much dolomitic sandstone.

* Air dried color, following the Munsell Soil Color Chart.

Subrounded grains of quartz are most common in the sand; angular to well-rounded grains are present. Surfaces retain crystal faces or are smoothly fractured to frosted. Glauconite is present throughout most of the horizons, being very rare or absent in Strata A, F, and I (common in Wittry's sample I from center of shelter) and abundant in parts of Strata C, D, G, and H. Garnet is the dominant heavy mineral. In the sand zones heavy minerals are most abundant in the small sizes and make up 10-20 percent of the silt size portion. In silt zones Q and S, and presumably U (which was not seen by the writer, but which is reported by Wittry to be similar to Strata S) heavy minerals are rare. Small pebbles of the Baraboo quartzite are sparsely distributed throughout the section; one disintegrated cobble of medium-textured diorite was collected from the lower part of Stratum D. Small rounded to angular fragments of marine shells are present. Clay is absent at most horizons and makes up an insignificant part of the section. Silt increases from a trace in most of the section to several percent in parts of Strata A, C, D, F, I, and O. The bulk of Strata G, S, and U are silt; silt also is concentrated locally in thin seams and irregular lenses in Stratum T. Charcoal is abundant in parts of Strata A, C, D, F, I, O, and Q. Secondary carbonite precipitates are particularly noticeable in Strata D, F, I, O, and Q. Red ferric oxides are prominent in Strata A, C, D, F, and I.

Prominent dark and light Strata A through Q are essentially horizontal or dip gently into the shelter. Strata R through T are truncated by Q and dip irregularly 10 to 40 degrees out of the shelter. Most layers have been traced throughout the shelter deposits by Wittry, but they cannot be traced more than 10 or 15 feet out of the shelter. Pits dug in the center of the glen in front of the shelter and in the low divide to the west revealed homogeneous sand to the greatest depth pene-

trated of seven feet. No concentrations of silt, glauconite, charcoal, or iron oxides were noted in the field. Extensions of silt Strata S and U to the pits would cause them to fall below the depth reached; however, extension of Stratum Q to the pits would place it well within the excavations.

Geologic interpretation and significance of the shelter deposits

The time and mode of origin of the shelter are conjectural. As will be brought out more fully later, the shelter probably was formed in roughly the same dimensions as now at some time prior to deposition of the shelter depsits. Wind erosion of the shelter is inconceivable. No well-defined stream channels are adjacent to the shelter although one is in the immediate proximity south of the shelter, and an incipient tributary gully with its head now captured flows westward through the glen in front of the shelter. A combination of differential weathering processes in rocks of variable resistance, of slope wash, and of considerable gravity movement of loosened material seems the most logical mode of origin. The differential rate of loosening of sand grains from various beds in the Franconia formation is obvious today wherever the formation crops out. The Mazomanie member locally is very poorly cemented as are parts of the walls of the shelter. Solutions can easily penetrate the highly porous and permeable rock, and little solution is required to dissolve the cement between quartz grains. Frost action also aids grain separation today as it undoubtedly did in the past. Once loosened, individual grains are rolled easily by rain-drop impact, slope wash, and gravity. Gravity was an especially effective agent in moving loosened sands in most of southwest Wisconsin during early Wisconsin time, and even today the large amphitheater-like heads of incipient gullies lack sufficient drainage area for water to be an effective erosive and transporting agent. Gravity is still at work.

At the shelter today deposition of material by slope wash is dominant. Prior to the capture of the head of the incipient gully that passes through the glen, that gully probably aided in the removal of material from the shelter. Loss of part of its drainage area undoubtedly changed its role from one of degradation to aggradation. However, even when it was best

developed, it probably was subordinate to gravity in forming the shelter. Otherwise more channels eroded by water would be seen. The time most propitious for carving the shelter logically would be early Wisconsin time when perennially frozen ground was present, and gravity movements were at their maximum.

The general uniformity of size and composition of the materials in the shelter deposits are to be expected considering the general uniformity of the Franconia and younger formations in the area. Because of the lack of details on the formations and the impracticality of studying the bedrock in detail, no positive correlations of the sands with the local bedrock can be made — size, shape, and composition of grains are too much alike. However, the marked decrease in amount and to a lesser extent in variety of heavy minerals in the shelter deposits from those present in the Mazomanie member of the Franconia formation that makes up the walls and ceiling of the shelter suggest that the shelter deposits were not entirely derived by simple gravity deposition from the rock. This is corroborated by the greater abundance of glauconite and silt in some horizons than is present in the walls or ceiling of the shelter. Obviously at least some and probably most of the material has been brought into the shelter by natural means. The slight increase of silt in cultural levels indicated by abundant artifacts, charcoal, and iron oxides can be attributed to man. Man probably also brought in the diorite cobble in Stratum D from an outcrop 1.6 miles northeast of the shelter. The cobble has since been disintegrated by freezing. The high increase in silt in Strata Q, S, T, and U is attributed to work of wind. The silt portion is extremely well-sorted in the loess range; the heavy mineral suite shows only those minerals as are common to the Croixan formations, but they are in very minute amount, whereas, the heavy minerals of the silt sized portion of the sands or sandstones are many times more abundant. Hence, it is assumed that the sands were largely transported by water and gravity which are more competent to transport and sort the heavy minerals.

Charcoal in the upper strata results from the work of man. However, charcoal in angular to rounded particles ranging in

size from several millimeters to hundredths of a millimeter is present in Stratum T, the lowermost examined. No artifacts or definite evidence of man's occupation of the shelter at such an early time was found. The charcoal may have been brought to the shelter by wind and water from forest fires, but the casual occupancy of the shelter by man cannot be excluded.

The prominent dark banding is attributed mainly to abundant charcoal. The yellow or brown colors are derived by staining of the surfaces of the colorless to white quartz grains with iron oxides. The silt-sized particles are also mostly quartz, but because of greater surface area and smaller size darken more readily than the sand.

The greater rarity or complete absence of glauconite in parts of the cultural levels may be explained by the fact that uric acid from man and wild animals would easily destroy glauconite leaving ferric oxides behind. Such oxides are most common in cultural levels perhaps for that reason. Partly destroyed grains are present. Glauconite is relatively rare in

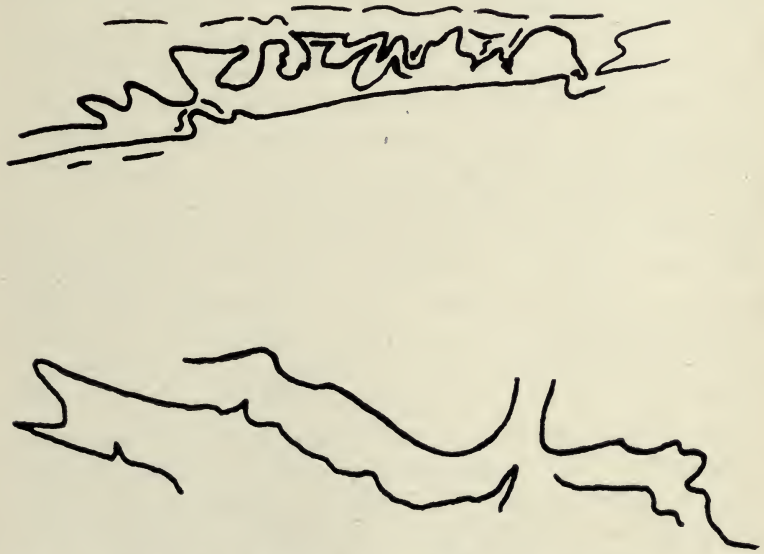


Fig. 2. Involutions in bedding produced by slump and frost action(?) in Stratum Q (above) and Stratum T (below). The sketch above represents a horizontal distance of five feet and that below, one foot.

the lowermost part of the section; presumably it was never abundant there for the grains that are present do not show any alteration. Secondary carbonates certainly in part reflect uric acid solution, migration, and deposition, but humic acids may also have been important. The greater abundance of dolomitic stones in the lower part suggests either lack of uric acid for solution or the fact that fresher rock was being brought into the shelter early in the period of deposition or both.

Stratification of the deposits shows a most significant break directly below Q. Steep outward dips, contortion of bedding, and truncation of layers R, S, and T in contrast to the flat-lying layers above seem to mark an abrupt change in local environment. Typical contortions of bedding in Stratum T and very locally in Stratum Q, as shown in Figure 2, are similar to involutions (Flint, 1957, p. 200) that are related to slump and frost processes typical of perennially frozen ground.

Permafrost was not common to Wisconsin after the Cary substage of glaciation about 12,000 to 14,000 years ago. Whether the lower deposits are that old, is certainly conjectural, but the thought is intriguing. It is supported in part by the fact that no snails were found in the lower deposits. Was the shelter too cold for them? Furthermore, when was the climate and landscape such as to produce loess from the local materials? Little, if any, is being deposited today.

The pollen record from Baraboo area (Hansen, 1937) reveals a transition in flora through 15.5 feet of deposits in glacial lake Wisconsin, starting with spruce-pine forest in late Cary times and going to oak-pine. A return to spruce temporarily is correlated by Hansen 1937, p. 148) with the Mankato substage (equivalent to the Valders). These changes reflect cool climates initially (in late Cary times) and general warming thereafter with a temporary cooling during the Valders.

We know that during the Cary substage of glaciation (Alden, 1918, p. 108) Honey Creek valley at Leland was a lake dammed by glacial-fluvial deposition in the Wisconsin River valley. Wells at Leland reveal about 100 feet of sand with black muck at at depth of 30 feet (Alden, 1918, p. 112). Cary ice stopped nine miles east of the rock shelter, and glacial outwash came no closer than the Wisconsin River Valley. The

loess in Strata Q and S does not contain a suite of heavy minerals typical of glacial outwash, in which a great variety is present, but contains mostly garnet and only traces of other minerals. The lake in Honey Creek valley presumably was being filled by runoff from the adjacent hills rather than from glacial outwash. Hence, that lake seems the most likely source of the loess in the shelter. The lake was partly drained when the muck deposits were formed at a depth of 30 feet and was completely drained at the close of the Cary substage. No evidence has been found that it ever again held water. The cold climates of the Cary in contrast with those that followed and the likelihood that bare lake deposits were exposed to wind erosion twice, at the close of the Cary substage and some earlier time, suggests a possible correlation with loess Strata U and S. Silt lenses in Stratum T probably are reworked loess. The lesser amount and smaller size of loess in Stratum Q that came in presumably after permafrost climates largely ceased may also represent a reworking of loess from the surrounding hills. A likely time for this to take place would be during the cooler climates of the Valders substage of glaciation, 9,500 to 10,500 years ago.

Deposition above Stratum Q seems relatively continuous and uniform in rate. At least nothing was seen to indicate long breaks or marked fluctations in rate of deposition. If this be true and Q dates about 10,000 years ago (8,000 B. C.), then it is reasonable to assume that cultural level I, which is half the distance to the surface, would be on the order of at least 5,000 years old (3,000 B. C.). However, at least 1-2 feet of the surface deposits were removed by man in historical time (0.8 foot to over 2.0 feet had washed back in since that removal) so this simple extrapolation yields an age that is too young. Layer I would be perhaps only three- to four-tenths of the distance to the surface, equivalent to a time of about 6,000-7,000 years ago or 4,000 to 5,000 B. C. Layer F is about half the distance to the reconstructed surface, hence, would be equivalent to an age of about 3,000 B. C. These later ages are in good agreement with Wittry's interpretation of the archeological remains discussed in the preceding paper.

Editor's Note: These ages are also in agreement with the radiocarbon dates of Samples M-812 and M-813, received after the above manuscript was written. See Wittry's paper.

REFERENCES CITED

ALDEN, WILLIAM C., 1918, The Quaternary geology of southeastern Wisconsin: U. S. Geol. Survey Prof. Paper 106, 356 p.

BECKER HANS, 1931, A study of the heavy minerals of the pre-Cambrian and Paleozoic rocks of Baraboo Range, Wisconsin: Jour. Sed. Petrology, v. 1, p. 91-95.

BERG, ROBERT R., 1954, Franconia formation of Minnesota and Wisconsin: **Geol. Soc. America Bull.,** v. 65, p. 857-882.

————, NELSON, C. A., and BELL, W. C., 1956, Upper Cambrian rocks in southeast Minnesota: Geol. Soc. America Guidebook Series, Field Trip No. 2, p. 1-23.

FLINT, RICHARD FOSTER, 1957, Glacial and Pleistocene geology: J. Wiley & Sons, 553p.

HANSEN, HENRY P., 1937, Pollen analysis of two Wisconsin bogs of different age: Ecology, v. 18, p. 136-148.

NELSON, C. A., 1956, Upper Croixian stratigraphy, upper Mississippi Valley: Geol. Soc. America Bull., v. 67, p. 165-184.

PENTLAND, ARTHUR G., 1931, The heavy minerals of the Franconia and Mazomani sandstones, Wis.: Jour. Sed. Petrology, v. 1, p. 23-36.

TROWBRIDGE, ARTHUR C., and ATWATER, GORDON I., 1934, Stratigraphic problems in the upper Mississippi Valley: Geol. Soc. America Bull., v. 45, p. 21-80.

TWENHOFEL, W. H., 1936, The greensands of Wisconsin: Econ. Geology, v. 31, p. 472-487.

————, RAASCH, G. O., and THWAITES, F. T., 1935, Cambrian strata of Wisconsin: Geol. Soc. America Bull., v. 46, p. 1687-1744.

WANENMACHER, J. M., 1932, The Paleozoic strata of the Baraboo region, Wisconsin: Ph. D. Thesis, The University of Wisconsin.

————, TWENHOFEL, W. H., and RAASCH, G. O., 1934, The Paleozoic strata of the Baraboo area, Wis.: Am. Journ. Sci., v. 28, p. 1-30.

ANIMAL REMAINS FROM THE RADDATZ ROCKSHELTER, Sk5, WISCONSIN

Paul W. Parmalee

Illinois State Museum, Springfield

The Raddatz Rockshelter is an Archaic site located in central Sauk County, Wisconsin, approximately nine miles west of the terminal moraine of the Cary Glacier. The surrounding area is hilly and, during the period of time in which the site was occupied, was probably covered with heavy stands of timber. A small creek (Honey Creek) flows in close proximity to the site and in all probability some of the adjoining areas were low and marshy, judging from the remains of certain species recovered in the midden debris. Although the creeks (and larger rivers?) were searched for the purpose of collecting fresh-water mussels, the majority of vertebrate remains indicate that most of the hunting was done in the upland, wooded areas.

A large quantity of bone and, to a more limited extent, shell, was recovered by Warren L. Wittry, State Historical Society of Wisconsin, and his crew during their summer field work in 1957. At least 15 species of mollusks were represented as well as approximately 50 species of vertebrates; over 5,200 bone remains were identified. The species of mollusks and the number of identified remains of each are listed in Table I, while Table II is a list of the vertebrates represented and the number of identified remains of each species. The quantity of bone and shell recovered at this site serves as an excellent index to the animal foods eaten by these Archaic people and to some extent the past occurrence and relative abundance of certain species in that local area.

Accounts of Species

(Mollusks)

Snails: — Nearly 200 shells of gastropods were identified from this sample of midden material, of which **Anguispira alternata** constituted approximately 81 percent of the total. Although the possibility exists that these mollusks were utilized for food, the comparatively small quantity indicates that they were not and their presence in the midden debris is natural. In a comparable Archaic site in southwestern Illinois, how-

TABLE I

The Species and Number of Identified Remains of Mollusks Recovered at the Raddatz Rockshelter (Sk5), Sauk County, Wisconsin. 1957.

Species	Total Number of Identified Remains
FRESH-WATER MUSSELS:	
Lampsilis ventricosa (Pocketbook)	22
Actinonaias carinata (Mucket)	8
Elliptio dilatatus (Spike)	7
Lampsilis siliquoidea (Fat Mucket)	2
Quadrula metanevra (Monkey-face)	2
Lampsilis sp.	2
Anodonta sp. (Floater)	2
Ligumia recta (Black Sandshell)	1
Plethobasus cyphyus (Sheepsnose)	1
Amblema sp. (Three-ridge)	1
SNAILS:	
Anguispira alternata	154
Triodopsis and/or **Mesodon** spp.	18
Mesodon thyroidus	9
Stenotrema fraternum	5
Triodopsis multilineata	3
Helicina orbiculata	2

TABLE II

The Species and Number of Identified Remains of Vertebrates Recovered at the Raddatz Rockshelter (Sk5), Sauk County, Wisconsin. 1957.

Species	Total Number of Identified Remains
AMPHIBIANS:	
Small Frogs and/or Toads	16
TURTLES:	
Snapping Turtle (**Chelydra serpentina**)	30
Box Turtle (**Terrapene carolina**)	28
Turtle spp.	18
Painted Turtle (**Chrysemys picta**), Blanding's Turtle (**Emys blandingii**) and/or Map Turtle (**Graptemys** sp.)	17
Painted Turtle (**Chrysemys picta**)	10
Blanding's Turtle (**Emys blandingii**)	2
SNAKES:	
Snake sp.	8

BIRDS:

Passenger Pigeon (**Ectopistes migratorius**)	149
Ruffed Grouse (**Bonasa umbellus**)	84
Turkey (**Meleagris gallopavo**)	14
Sharp-tailed Grouse (**Pedioecetes phasianellus**)	10
Small Passerines	9
Flicker (probably Yellow-shafted Flicker, **Colaptes auratus**)	7
Screech Owl (**Otus asio**)	6
Woodpecker spp.	5
Cardinal (**Richmondena cardinalis**)	4
Common Crow (**Corvus brachyrhynchos**)	4
Blue Jay (**Cyanocitta cristata**)	4
Turkey Vulture (**Cathartes aura**)	3
Red-tailed Hawk (**Buteo jamaicensis**)	2
Barred Owl (**Strix varia**)	2
Sora (**Porzana carolina**)	2
Catbird (**Dumetella carolinensis**)—probably	2
American Coot (**Fulica americana**)	1
Mallard (**Anas platyrhynchos**)	1
Canada Goose (**Branta canadensis**)	1
Wood Duck (**Aix sponsa**)	1
Red-headed Woodpecker (**Melanerpes erythrocephalus**)	1
Redwinged Blackbird (**Agelaius phoeniceus**)	1
Owl (**Asio** sp.; probably Short-eared Owl, **A. flammeus**)	1

MAMMALS:

Whitetail Deer (**Odocoileus virginianus**)	4,409
Eastern Chipmunk (**Tamias striatus**)	55
Elk (**Cervus canadensis**)	34
Raccoon (**Procyon lotor**)	33
Gray Wolf (**Canis lupus**)	33
Woodchuck (**Marmota monax**)	33
Red Squirrel (**Tamisciurus hudsonicus**)	27
Southern Flying Squirrel (**Glaucomys volans**)	26
Gray Squirrel (**Sciurus carolinensis**)	25
Eastern Cottontail (**Sylvilagus floridanus**)	24
Beaver (**Castor canadensis**)	20
Canis sp. (Probably Domestic Dog, **C. familiaris**)	20
Common Mole (**Scalopus aquaticus**)	15
Big Brown Bat (**Eptesicus fuscus**)	7
Brown Bat (**Myotis** sp.)	6
Vole (**Microtus** sp.)	5
Deer Mouse (**Peromyscus** sp.)	4
Muskrat (**Ondatra zibethica**)	3
Bog Lemming (**Synaptomys cooperi**)	2
Bobcat (**Lynx rufus**)	2
Red Fox (**Vulpes fulva**)—probably	2
Martin (**Martes americana**)	2
Fisher (**Martes pennanti**)	1
Short-tailed Shrew (**Blarina brevicauda**)	1
Northern Flying Squirrel (**Glaucomys sabrinus**)	1
Weasel (**Mustela frenata**)	1
Mountain Lion (**Felis concolor**)	1

ever, the concentration of tremendous numbers of snail shells suggests that these mollusks were eaten (Fowler, Winters and Parmalee, 1956).

Fresh-water Mussels: — The small quantity and number of species of mussels indicates that this source of food was of a very minor importance. Forty-eight specimens were identified, representing no more than 10 species; there were a few additional fragments scattered throughout the levels that were unidentifiable. It is of interest to note that, although a few of the specimens were typically small creek forms which had probably been gathered from near-by streams, the majority were heavy, thick-shelled specimens characteristic of medium-to-large rivers. This was particularly true of **P. cyphyus, Q. metanevra** and the majority of specimens of **L. ventricosa, A. carinata** and **E. dilatatus.** Possibly these mussels were obtained in one of the nearby streams that was then carrying a much greater volume of water.

One complete valve of **L. ventricosa** was recovered that had the pseudocardinal teeth ground off while another badly broken specimen (probably this species) was found that also bore evidence of having been worked. The Pocketbook is a deeply concave shell and with slight modification could have well served as a spoon or cup; these specimens had probably been put to such a use. Apparently the mollusks served only as a minor supplement to the staple diet of mammals and birds and, as a group, were of little significance.

(Vertebrates)

Amphibians: — Sixteen limb bones of quite small frogs and/or toads were recovered in the midden deposit. The small number of amphibian remains and the small size of the specimens represented suggest that their presence was due to their natural occurrence at the rockshelter and that they probably were not eaten by the Indian. Of special interest is the fact that not a single fish bone was found in the midden debris; fish were definitely present in the streams so it is apparent that the Indians occupying this site either disregarded them as a food source or were unable to capture them.

Reptiles: — The presence of snakes at the Rockshelter site

is indicated by the recovery of only eight vertebrae. Bluff areas such as the one forming the rockshelter provide excellent habitat for certain species of snakes and these few remains were from an individual(s) that probably inhabited the area and died there, independent of the human occupation.

Turtles were apparently utilized to some extent by the Indians that occupied this site although remains could not be considered numerous. Bones of the Snapping Turtle were the most common (30) with those of the Box Turtle ranking second (28). The majority of the remains were those of acquatic specimens and probably the turtles were caught in neighboring marsh areas and/or in the streams flowing close to the site. In all probability the turtles were captured primarily for food although a few sections (e. g., those of **Emys blandingii**) bore evidence of having been scraped and smoothed on the inner surface; the carapace apparently had served as a dish or other utensil.

Birds: — Bones of at least 22 species of birds were identified from the midden debris although the total number of avian remains (325) was small in comparison to those of mammals. Possibly the most noteworthy record is that of the Passenger Pigeon, a species now extinct although formerly a common bird in Wisconsin. A total of 149 bones were identified as **E. migratorius** and of the 126 unidentifiable bird bone fragments, a large percentage could probably be referred to this species. Goslin (1955) found bones of the Passenger Pigeon common in several rock shelters in Ohio and Parmalee (1958a) noted that, in Illinois, only at the Archaic Modoc Rock Shelter Site were remains of this species recovered in any quantity. It appears that, in the case of the Passenger Pigeon and possibly certain other species, they were utilized to a greater extent by the more primitive Archaic people than by later and more advanced cultural groups (Hopewell; Middle Mississippi) who had more time and/or developed better methods for collecting larger and more preferred species.

The Ruffed Grouse was utilized to a considerable extent and was probably hunted on the wooded hillsides near the site. Turkey and Sharp-tailed Grouse were taken in fewer numbers but all three species indicate that most of the collect-

ing was done in the upland areas.

The paucity of waterfowl remains (ducks, geese, swans) is of interest since the region apparently contained enough open water to attract them, at least temporarily during migrations. Only one bone each of the Wood Duck, Canada Goose and Mallard was recovered although the presence of remains of the American Coot, Sora, Redwinged Blackbird and Pied-billed Grebe attest to the presence of an aquatic environment. The nearly complete absence of remains of waterfowl, a group of birds that would certainly have served as a valuable source of food (Fowler, Winters and Parmalee, 1956; Parmalee, 1958b), suggests that the rockshelter may have been a seasonal camp. The site was perhaps occupied during late spring and early summer; the occupants returned after the spring migration and left before the fall migration began.

Several species of woodpeckers and small passerines were represented in the midden materials but their significance or relationship to the Indian is a matter of speculation. Possibly they were used for some purpose (food?; ornamentation?) although the presence of these birds may be the result of their natural occurrence and death at the site. A similar problem exists with the remains of hawks and owls although there is, in the case of later cultural groups, some evidence to indicate that these raptorial birds were purposely collected by the Indian, their wings (and possibly other parts) being used for decoration or ceremony (Parmalee, 1958b). Bones of the Turkey Vulture at this site are noteworthy since the bird is generally uncommon to rare in Wisconsin; Neill, Gut and Brodkorb (1956) suggest that "Possibly they [Turkey Vulture, Red-tailed Hawk, Bald Eagle, Fish Crow] were attracted by the refuse about the middens".

The Passenger Pigeon and Ruffed Grouse were used more extensively than all of the other species combined. Although birds as a group, and particularly the two above-mentioned species, were of some importance as a source of food to the Indians once occupying this site, the quantity (or actual bulk of meat) was not comparable to that obtained from mammals, particularly the Whitetail Deer.

Mammals: — There is little doubt that of all the species of animals used by the Indians, the Whitetail Deer was singly the most important. Over 4,400 bones from the Raddatz Rockshelter Site were determined as **O. virginianus** (92 percent of the total identified mammal remains) and, of the over 32,300 bone splinters and fragments that were unidentifiable, the majority were probably those of the Whitetail Deer. Nearly all of the deer bones had been broken, possibly for the purpose of securing marrow, and consequently a tremendous number of bone chips and fragments resulted.

One of the most noteworthy aspects of the faunal analysis was the almost complete absence of antler; less than a dozen pieces were recovered. As in the case of the very few waterfowl remains, the paucity of antler also suggests the possibility that this site was a temporary or seasonal camp. The antlers are generally dropped after mid-December while the new set does not begin growing again until April and is not fully developed until the latter part of August. A few skull sections of male deer were found which exhibited the antler base but none were found with the antler attached; coupled with the evidence cited above, it appears that the deer were killed during the antlerless season.

Elk were present in the area, but apparently the Indians occupying this site made little use of the animal. The majority of remains were the phalanges although the jaws of an old individual were also recovered; 34 bones were identified as this species but there was a minimum of only one animal represented. Bones of the Raccoon, Beaver and Muskrat point to the presence of an aquatic habitat but, like many of the species represented by only a few remains, they provided only a very small portion of the Indian's food. However, most of the local animals were probably caught and utilized whenever they were found.

Several species of small mammals were taken in limited numbers, the remains of squirrels (Red, Gray, Flying), the Eastern Cottontail and the Woodchuck being the most numerous. A rockshelter of this type would serve as a natural habitat for the Chipmunk so it is a matter of speculation as to

whether or not this small rodent was eaten. The presence of such forms os the Big Brown Bat, Common Mole, Bog Lemming, Short-tailed Shrew, Voles and other mice is probably the result of their normal habitation and death at the site; it is doubtful if these animals were used by the Indian.

The recovery of the distal end of a femur of the Mountain Lion is of interest as are the numerous remains of the Timber Wolf. These large carnivores may have been killed for their flesh and/or hides although, in the case of **C. lupus**, the animals were possibly taken as trophies. The roots of two teeth from a large specimen bore evidence of having been cut or ground down and originally the section of skull containing them may have been carried or worn as an ornament. The Indians occupying this site evidently had dogs although they were apparently few in number as evidenced by the limited quantity of remains specifically referable as **Canis familiaris.**

Intrusive Material

A total of eight bones of the Domestic Sheep (**Ovis aries**), two of the Domestic Hog (**Sus scrofa**) and two, which are probably those of the Domestic Chicken (**Gallus gallus**), were also recovered in the midden debris. These remains are probably the result of recent farming or stock-raising activities and have no archaelogical significance.

LITERATURE CITED

FOWLER, MELVIN L., WINTERS, HOWARD D. and PAUL W. PARMALEE. 1956 The Modoc Rock Shelter, Preliminary Report. Ill. State Museum, Report of Investigations No. 4, pp. 47-53.

GOSLIN, ROBERT M. 1955. Animal Remains from Ohio Rock Shelters. Ohio Jour. Science, Vol. LV, No. 6, pp. 358-362.

NEIL, WILFRED T., GUT, H. JAMES and PIERCE BRODKORB. 1956. Animal Remains from Four Preceramic Sites in Florida. Amer. Antiquity, Vol. 21, No. 4, pp. 383-395.

PARMALEE, PAUL W. 1958a. Remains of Rare and Extinct Birds from Illinois Indian Sites. Auk, Vol. 75, No. 2, pp. 169-176.

————. 1958b. Vertebrate Remains from the Cahokia Site, Illinois. Trans. Ill. State Acad. Science, Vol. 50, pp. 235-242.

New Society officers, listed on Cover II, were elected at the annual business meeting on April 20th. The annual banquet was held at the Ammassador Hotel, Milwaukee, on May 18th, with over 50 members in attendance. The Society's Lapham medal was awarded to Dr. Arthur Niehoff; the presentation was made by Dr. E. G. Bruder to Mrs. Niehoff as Art was in Washington being briefed for his new job with the International Cooperative Administration in Pakse, Laos, French Indo China. Dr. Stephan F. Borhegyi, Milwaukee Public Museum director, in whose honor the banquet was held, gave an illustrated lecture on Maya architecture and archeology.

Another new publication of interest to collectors and students of archeology is the "Guide to the Identification of Certain American Indian Projectile Points," by R. E. Bell, **Special Bulletin No. 1, Oklahoma Anthropological Society.** 1959. $4.00. Professor Robert E. Bell, Editor of the Oklahoma Anthropological Society and archeologist at the U. of Oklahoma, has long been interested in the identification of projectile point types. The **Guide** assembles a total of fifty types, each being illustrated by a superbly drawn plate in full size. Accompanying the plate, and printed on the facing page for convenient reference, is a description of the type and a brief discussion of distribution and association as well as age and cultural affiliation. While a majority of the point types are from the Caddoan area of Oklahoma, Arkansas, Texas and Louisiana, some from more distant areas — including Tennessee, Ohio and the western states — are included. Specimens selected for illustration represent typical examples of each type rather than a wide range of variation. Copies may be ordered from Dr. Bell, Dept. of Anthropology, U. of Oklahoma, Norman, Oklahoma.

Wisconsin Archeological Society pins are available to

members only from the secretary. In plain gold color, the prices are $1.00 for the button type and $1.25 with a safety catch. With a white enamel background, the prices are $1.25 and $1.50 respectively. Tax and postage are included.

A hearty welcome is extended to the following new members. We are now over 500 strong. Let's keep going!

Davenport Public Library, Davenport, Iowa.
Joseph G. Emielity, 3278 N. 24th St., Milwaukee, Wisconsin
University of Iowa Library, Iowa City, Iowa
Andrew J. Rowder, R. F. D. 2, Waupun, Wisconsin
Dr. C. J. Schneider, 521 Wilcox St., Milwaukee, Wisconsin

Due to Art Niehoff's departure and Bob Ritzenthaler's extension of fieldwork in Africa, the undersigned is acting as temporary editor.

Warren L. Wittry

INDIAN RELIC MEETING

The 27th annual gathering of collectors and an outdoor hobby show will take place on Saturday, September 12th, 1959, at Petrie's Log Cabin Museum, Brown's Lake, 1½ miles east of Burlington, Wisconsin, on Highway 11, 35 miles southwest of Milwaukee. Indian Relic and Curio collectors will have material for sale, trade and exchange. Display tables, coffee and doughnuts free of charge to early comers. All are invited. Bring your friends and meet new ones. Most active hours from 9 A. M. to 2:30 P. M. Drive your car near your table for easy unloading. Free entertainment. You can't afford to miss this meeting!

Interesting Wisconsin Specimens

Fine-grained limestone Micmac pipe and gunflints of European flint. Found near the right hand of a partially flexed adult Indian burial in grave on the Milo Edwards farm, north shore of Lake Kegonsa, Dane County. He was a short fellow with crippled feet—the bones of both were fused together. The concave edges on the gunflints indicate use with fire-steel. Fragments of a turtle shell bowl, probably for tobacco, were associated with the pipe and gunflints. State Historical Society of Wisconsin specimens (1958.654) shown actual size.

"OFFHAND, I'D SAY WE OUGHT TO LOOK FOR A NEW PLACE."

September, 1959 Vol. 40, No. 3

THE WISCONSIN ARCHEOLOGIST

KANSAS CITY, MO.
PUBLIC LIBRARY
JAN 4 1960

THE WAKANDA PARK MOUND GROUP, Dn1, MENOMONIE, WISCONSIN ---------- 9
Warren L. Wittry

THE TOTTEN SITE: A POSSIBLE NON-POTTERY SITE IN WALWORTH COUNTY ---------- 11
Robert F. Maher

A SEGMENTED, CIRCULAR FIRE PIT ON THE DUNHAM AREA OF THE RADKE-DUNHAM SITE (Wn2) ---------- 12
Jack Steinbring and Franklin Farvour

COLLECTOR'S CORNER ---------- 13

WISCONSIN ARCHEOLOGICAL SOCIETY

Milwaukee, Wisconsin

Incorporated, 1906

For the purpose of advancing the study and preservation of Wisconsin Indian Antiquities.

OFFICERS

PRESIDENT

P. H. Wiegand

VICE-PRESIDENTS

Laurence Kracht — Dr. D. A. Baerreis — Herman O. Zander

Paul Scholz — Lincoln Smith, Jr.

DIRECTORS

Dr. E. G. Bruder — Kermit Freckman

ADVISORY COUNCIL

Frank Achen
Carlos Cortez
William Curkeet, Jr.
Edward Eichenberger
Dr. William Godfrey
Robert L. Hall
Dr. Robert Howard
Zida C. Ivey
Paul Koeppler
Mrs. Theo. Koerner
William Oestreich
Neil Ostberg
Louis Pierron
Allen Prill
Arthur W. Quan
Dr. Chandler W. Rowe
Chas. G. Schoewe
Kirk Whaley
Dr. A. H. Whiteford
Dr. Warren L. Wittry
Lincoln Smith, Sr.
Dr. Stephan F. Borhegyi

TREASURER

Martin Greenwald, 4567-A N. 30th S., Milwaukee, Wis.

SECRETARY

Nona Wiegand, 1276 N. 63rd Ct., Wauwatosa 13, Wis.

EDITOR

Dr. Robert Ritzenthaler, Milwaukee Public Museum, Milwaukee 3, Wis.

MEMBERSHIP FEES

The Wisconsin Archeologist is distributed to members as part of their dues.

Life Members, $50.00 — **Endowment Members, $500.00**

Sustaining Members, $5.00 — **Annual Members, $2.00**

Institutional Members, $2.00

All communications in regard to the Wisconsin Archeological Society and contributions to the Wisconsin Archeologist should be addressed to Phil H. Wiegand, 1276 N. 63rd Ct., Wauwatosa 13, Wis. Entered as Second Class Matter at the Post Office at Lake Mills, Wisconsin under the Act of August 21, 1912. Office of Publication: 204 N. Main St., Lake Mills, Wis.

THE WISCONSIN ARCHEOLOGIST

New Series

Published Quarterly by The Wisconsin Archeological Society

MILWAUKEE, WISCONSIN, SEPTEMBER, 1959

THE WAKANDA PARK MOUND GROUP, Dn1, MENOMONIE, WISCONSIN

Warren L. Wittry

State Historical Society of Wisconsin

Although preserved in a city park for over 20 years prior to its destruction, this group of 17 conical and oval mounds has not been previously described. It was located on the north-Western shore of former Lake Menomin, * an enlargement of the Red Cedar River caused by the building of a dam during the days when Menomonie was a lumbering town. Before the building of the dam, the group was on the first terrace above the river's flood plain. Erosion by the lake had formed a steep bank about 7 feet high and caused the removal of most of Mound 4. It is possible that some mounds, east of those platted on Map 1 were completely eroded away, but this does not seem likely. The impending destruction of the group, which would result from the building of a new dam, was reported to the State Historical Society in 1954.

The new Northern States Power Company dam has raised the lake level almost 10 feet and the group is now destroyed. Salvage excavations were conducted in September, 1957, accompanied by the noise of chain saws and bulldozers used in preparing the area for inundation.

Fourteen of the 17 mounds were investigated through the cooperation of many individuals and the following organizations:

Dunn County Historical Society
Menomonie Lions Club
Menomonie Rotary Club
State Historical Society of Wisconsin
University of Wisconsin
Wisconsin Archaeological Survey

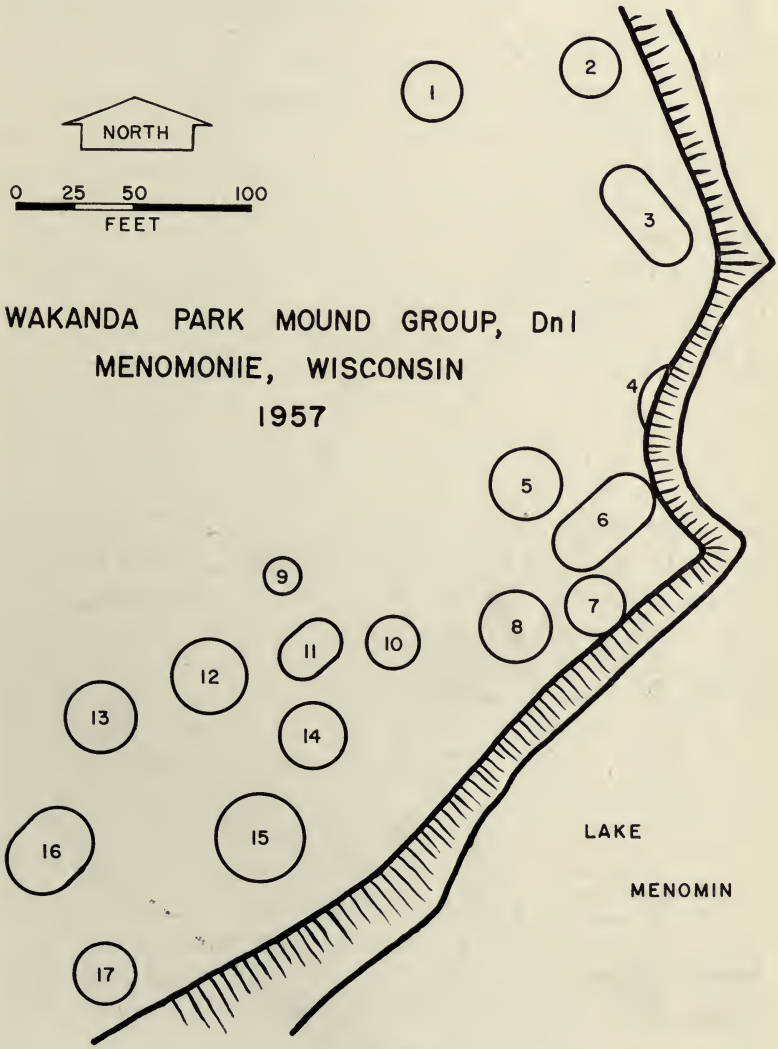
* SW ¼, NE ¼, Sec. 23, T28N, R 13 W, Dunn County.

The area of Wakanda Park containing the mounds was moderately wooded with red oak trees, averaging 1 foot in diameter (Fig. 1). A few small conifers scattered among the trees and mounds were obviously transplanted into the area as part of the park landscaping. The soil of the terrace, below the humus layer, was dark yellow to reddish sand to depths between 2.5 and 3.0 feet. Below this lay a coarse gray-colored sand. The humus layer on the surface of the mounds and the level land between them contained a great deal of charred wood, probably resulting from a forest fire after the mounds were built. The oak trees of the park did not show any fire damage. Recent digging in some of the mounds could be detected by pit outlines and by dispersion of charred wood from the surface soil in the pits.

Since the period of time for work was short, the mounds were investigated by the trenching technique rather than total removal. As is usually the case with Wisconsin mounds of this type, the principal interior features were located in the centers of the conical mounds and at points along the long axis of the oval mounds. The presence of trees on some of the mounds determined the orientation of the initial explor-

Fig. 1. The Wakanda Park Mound Group, Dn1. Camera orientation: SSW from Mound 3.

atory trench, which was placed in order to avoid the extra work of cutting through roots. However, efforts were made to adequately explore the central portions and the trenches were expanded to encompass all features encountered. During the fieldwork, usually 2 or more mounds were worked upon simultaneously with as many as 15 volunteer workers on the



Map 1.

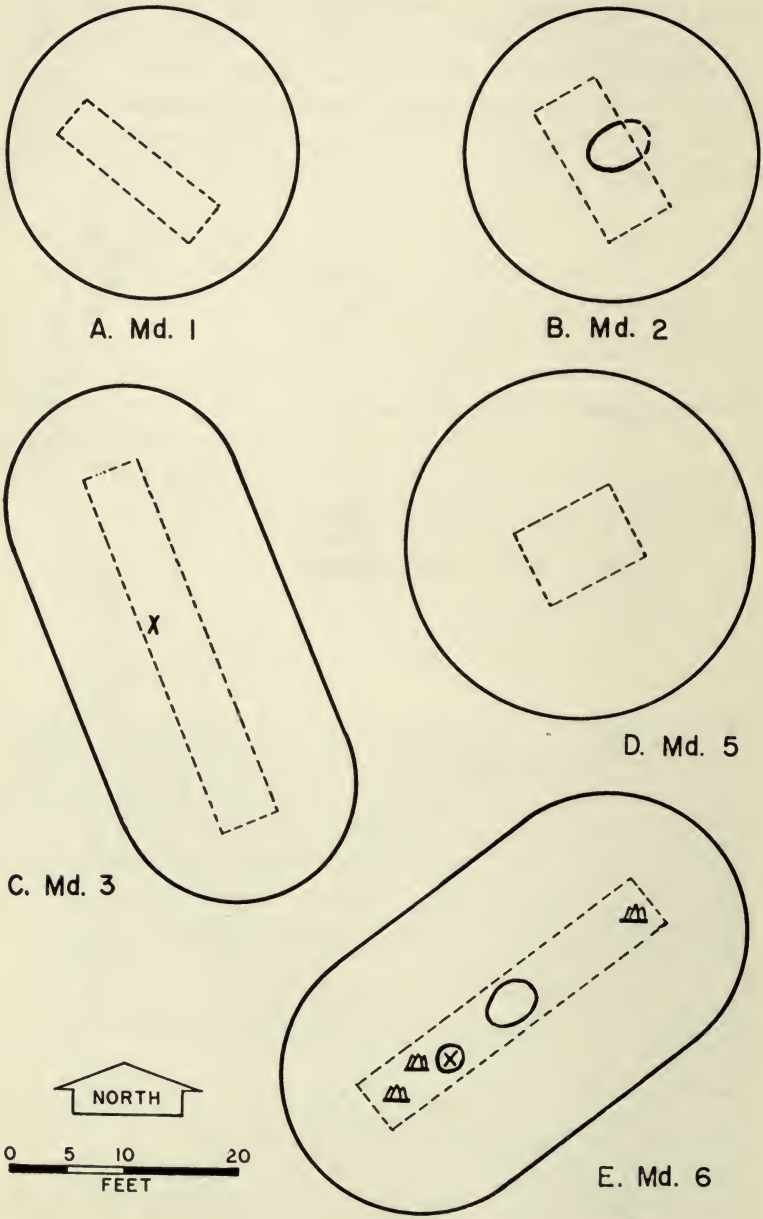


Fig. 2.

scene at one time. It is due to their efforts that the following information about the mounds can be set forth. I wish to thank John Dallman for his excellent drawings of Figs. 5, 6, and 7.

The results of the fieldwork are presented in the individual mound descriptions which follow. These data are then summarized and the interpretations which can be drawn are presented in the final section.

MOUND 1 (Fig. 2, A)

This was a conical mound, 25.0 feet in diameter and 2.0 feet in maximum height above the humus layer which was present as the mound floor. A 4.0 x 15.0 foot trench, dug through the center of the mound, disclosed that the central portions where the main feature might be expected had been disturbed by relic hunters. The earth in this area contained a chert flake, 3 quartzite flakes, and 5 small pieces of human bone. One of the latter was the end of a small long bone, epiphysis not yet fused, indicating that a young individual of unknown sex had probably been interred in this mound.

MOUND 2 (Fig. 2, B)

A conical mound, 25.0 feet in diameter and 1.4 feet in height. A 6.0 x 13 foot trench across the center of the mound revealed a centrally placed, oval, subfloor pit, 2.0 x 4.5 feet in width and length. The pit was oriented N60°E and extended 2.6 feet below the mound floor which was marked by the presence of the old humus. No artifacts were found in the mound fill and no bones or artifacts were found in the pit. It is likely, however, that the pit once contained a burial which had completely disintegrated. As will be seen, the preservation of bone at this site was exceedingly poor. Whether this was the result of soil conditions or because of a relatively great age will be discussed below.

MOUND 3 (Fig. 2, C)

An oval mound, 47.0 feet long and 21.0 feet wide, with a height of 2.3 feet above the mound floor. It could not be determined if the old humus layer was present as the mound floor although there was a distinct line separating the mound fill from the soil below. The long axis of the mound was ori-

ented N22°W. The only feature encountered in the 5.0 x 33.0 foot trench was a bundle reburial of human long bones, 2.0 feet northwest of the center of the mound and only 0.2 foot below the surface. The bones of the bundle were oriented approximately north-south and included 5 adult femora and 5 adult tibiae; all of the ends of these bones, save the distal end of one femur, were missing. A few of the bones show positive signs that ends had been cut off, but most of them are too eroded to reveal this fact. The condition of the central portions is fair and serves as an indication that the ends had been intentionally cut off. Since there was no indication of intrusion, the bundle of bones is considered an inclusive burial of the mound, the only one found in it.

The artifacts found in the fill of Mound 3 include 1 chert flake, 5 quartzite fragments, 10 grit-tempered bodysherds probably from the same vessel, with smoothed over cord-marked surfaces. Two unworked deer leg bones were also found in the mound material.

MOUND 4

The greater portion of the mound, apparently originally a conical, had been eroded away by the wave action of Lake Menomin. A profile was cut on the exposed side, showing that the old humus formed the floor of the mound. No remains were found. The size of the remaining portion indicates that this mound was probably comparable in size to the largest conicals of the group.

MOUND 5 (Fig. 2, D)

This conical mound was 30.0 feet in diameter and 2.6 feet in height above the old humus which formed the floor. A 7.0 x 9.0 foot trench dug in the center of the mound failed to reveal artifacts or any clear signs of a feature or burial. It appeared as though there was a central oval pit, about 3.0x 4.0 feet in dimensions and oriented N60°E, but the outline was indistinct and nothing was found by deeper digging in this area.

MOUND 6 (Fig. 2, E)

An oval mound, 45.0 feet long and 24.0 feet wide, oriented N51°E. The height was 2.5 feet above the floor which was

marked by the presence of the old humus. In the exact center there was an oval subfloor pit 3.0 x 4.5 feet, the long axis of which conicided with that of the mound. Its depth was 2.5 feet. The only contents were a few bits of charred wood. At the center of each end there was a circular fireplace, 1.0 foot in diameter, on the floor. These consisted of charred wood concentrations with burned earth below to show that the burning had occurred there. A third fireplace, only 0.5 foot in diameter was located 3.0 feet northeast of the fireplace at the southeastern end of the mound.

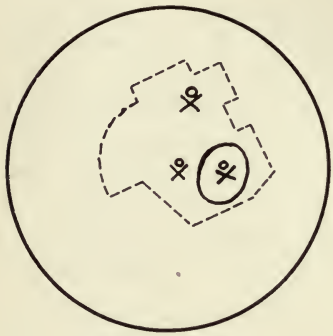
An interesting feature was a layer of pebblestones, each about 0.2 foot in diameter, in an area 2.5 feet in diameter, located on the mound floor midway between the central subfloor pit and the fireplace at the southeastern end of the mound. Upon this altar, as such features are termed in Wisconsin archeology, were crossed two human long bones, a femur and a tibia. The ends of the bones were missing. The proximal end of the femur had been cut off; its other end and the ends of the tibia were too badly eroded to show signs of cutting, but probably they had been cut off also.

MOUND 7 (Fig. 3, A)

Four flakes and a rimsherd (Fig. 5, A) bearing an incised decoration were recovered from the mound fill.

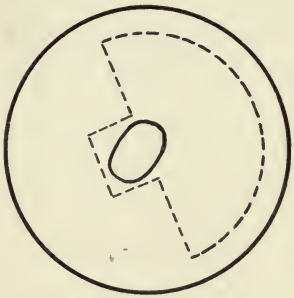
In some respects this was one of the most interesting mounds explored. It was a conical of average size for the group, 25.0 feet in diameter and 2.5 feet high. The old humus formed the floor except for a very shallow (depth 0.2 foot) oval area, 3.9 feet x 5.0 feet, from which it had been removed and filled with a layer of 171 cobblestones ranging from 0.2 to 0.4 foot in diameter. This altar was located just east of the center of the mound and was oriented N30°E. Charred wood and the partially cremated bones of a single adult male were found on the surface of the altar, the greatest concentration being on the southeast side. Knife marks on the bone fragments show that the body had been disarticulated and the flesh removed prior to cremation.

Unfortunately, it was not noticed in the field that scattered among the bones of this cremation there were fragments of a

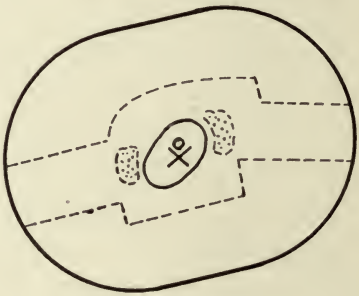


A. Md. 7

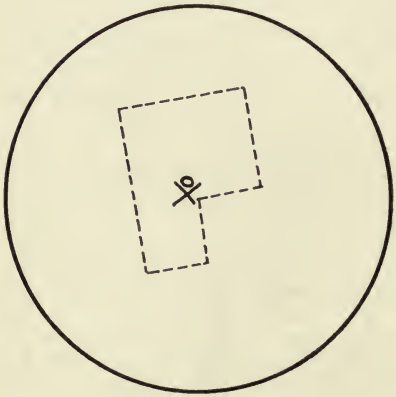
B. Md. 8



C. Md. 10



D. Md. 11



E. Md. 12

Fig 3.

clay mask similar to those for the Red Cedar River focus (Cooper, 1933). Twenty-five fragments were found among the partially cremated bones brought back to the museum. One piece fits on the mandible. The frontal bone of the skull was partially restored from fragments and shows a sharp line separating the exposed burned area and the unburned area protected by the mask.

At first it was puzzling that many of the mask fragments

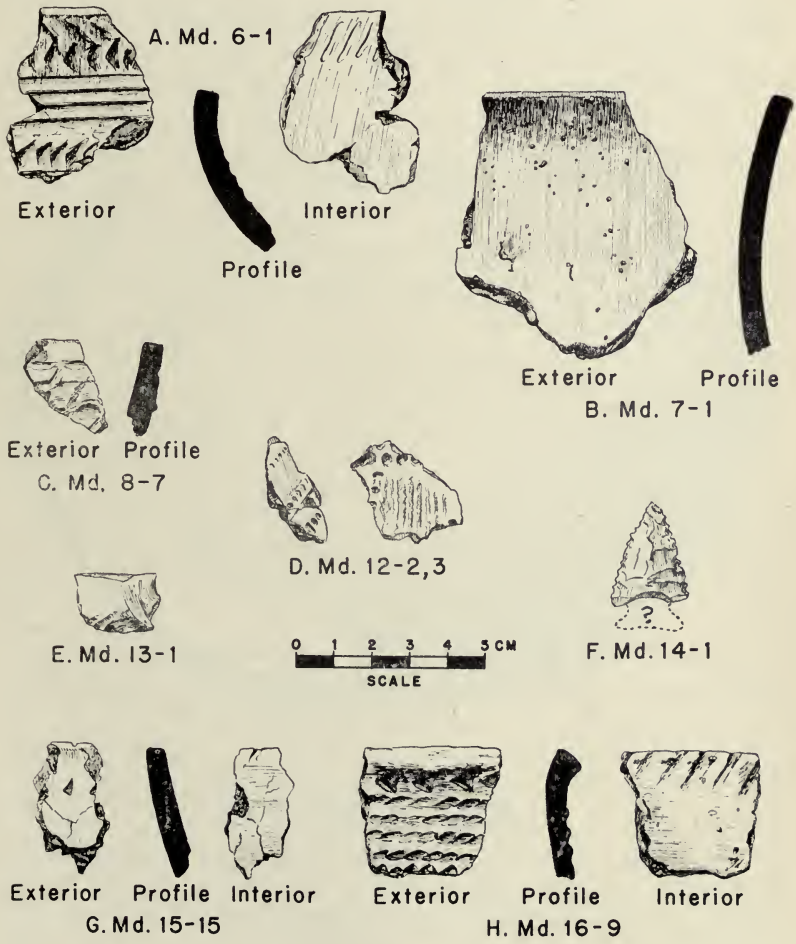


FIG. 5. Artifacts from fill of Wakanda Park Mounds.

bore partially obliterated net impressions, both on the interior (skull side) and exterior surfaces. Although the exact reason for them may not be known, they are not an impediment to the positive identification of the clay fragments as mask parts. In a detailed examination of the Red Cedar masks, Milwaukee Public Museum specimens, the writer found similar partially obliterated net impressions on the interior and exterior surfaces of both masks. The nose of Red Cendar Mask 1 was built up or supported with a stick while the nose of Mask 2 was partially built up with a wad of fabric.

A bundle reburial was located at the center of the mound floor. The long bones were oriented in the same direction as the altar. The skull was placed on its right side facing west-northwest at the south end of the bundle. An adult, probably a female, was represented by the bones.

The skull of a child was found 7 feet north of the mound center, resting on the floor. It was crushed and orientation could not be determined. The condition of the bones was somewhat different from the bones of the bundle reburial, possibly a result of exposure and bleaching prior to burial. The mandible and other bones of the individual were absent.

Several chert and quartzite flakes, a few grit-tempered, cord-marked bodysherds, and a grit-tempered smoothed-surface, undecorated rimsherd (Fig. 5, B) were found in the mound material. A large tree on the south side of the mound prevented further explorations in that part of the mound.

MOUND 8 (Fig. 3, B)

At the time of investigation, this was the highest mound of the group. It was a conical, 30.0 feet in diameter and 3.3 feet in height. Excavation revealed an intrusive pit in the center of the mound which partly intruded into another earlier intrusive pit, 4.5 feet in maximum dimension. The former, probably dug by relic hunters contained nothing while the latter, probably dug by a later group of Indians than those who built the mound, contained 2 skulls and one-half of a pottery vessel closely grouped at a surface depth of 2.8 feet.

The skulls were of adults, one probably a male, the other so badly eroded and fragmentary that sex could not be deter-

mined. Both mandibles were missing. The fragmentary pot (Fig. 6) exhibits a strange mixture of culture traits. The paste is Woodland, tempered with crushed granite. Middle Mississippi culture characteristics include a smoothed, red painted surface, a shape of an open mouth bowl with round bottom, sharp shoulder, inward slanted rim, and squared lip. The design of 4 parallel incised lines in a simple geometric pattern is more characteristic of Upper Mississippi culture. The vessel was 13.2 cm. in diameter and 9.5 cm. in height.

Further digging in the mound revealed that the floor was composed of the old humus layer. A few flakes and Woodland body sherds were found in the fill, but no inclusive features

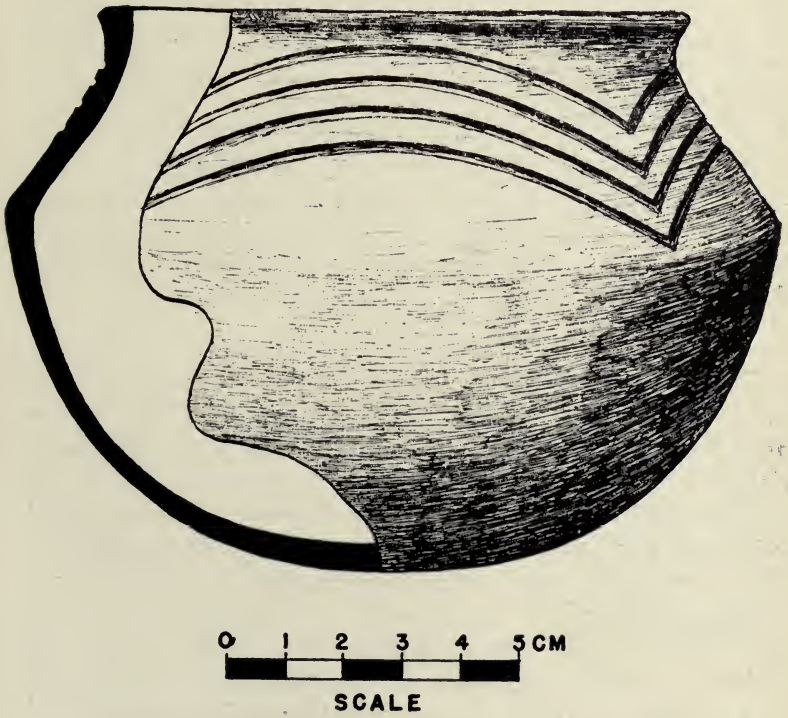


FIG. 6. Pottery vessel, intrusive pit in Mound 8, Wakanda Park.

or burials were discovered. A grit-tempered rimsherd (Fig. 5, C) with squared lip and incised decoration was found in the general mound fill.

MOUND 9

This small conical mound was 15.0 feet in diameter and 1.2 feet in height. A large tree in its center prevented investigation.

MOUND 10 (Fig. 3, C)

The diameter of this conical mound was 22.0 feet; height, 2.5 feet. The mound floor had been cleaned of humus. Excavation uncovered a centrally placed subfloor pit, 3.5 feet x 5.0 feet, oriented N30°E and approximately 1.1 feet deep. Relic hunters had sunk a post hole in the center of the mound which penetrated into the subfloor pit and which contained a glass gingerale bottle. The subfloor pit contained a quartzite flake, a fish scapula, and an artifact unique to Wisconsin archeolgy. It lay on the floor of the pit in several small fragments. When pieced together they formed two large pieces of an antler arm band or wrist-guard (Fig. 7, A). Only one of the two pieces is drawn in the figure. The other fragment indicates the size depicted.

MOUND 11 (Fig. 3, D)

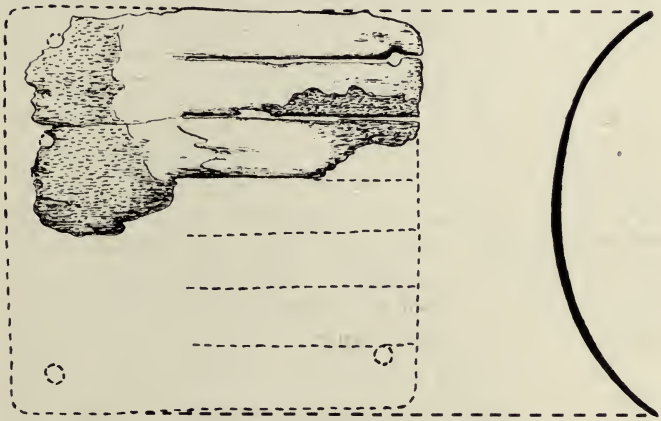
This mound was oval in outline and had an axis 27.0 feet in length, oriented N75°E. The width was 20.0 feet and the height was 2.5 feet above the mound floor which had been cleared of sod. An oval subfloor pit 3.3 x 5.0 feet was placed in the center of the mound, the long axis of which was oriented N40°E. The pit was a relatively deep one for this site and extended down through the dark yellow sand into coarse gray sand to a depth of 2.8 feet below the mound floor. The coarse gray sand had been penetrated about 0.4 foot and quantities of it were found on the mound floor adjacent to the pit on its eastern and western borders where the original diggers had thrown it out of the pit.

The pit contained a single primary burial of a young adult male. The bones were in a very poor state of preservation, but it was clear that the burial had been fully flexed and lay

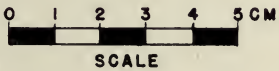
in the pit on its left side with the head at the northeastern end facing to the southeast. No artifacts were found in the burial pit. The mound material contained a single grit-tempered bodysherd.

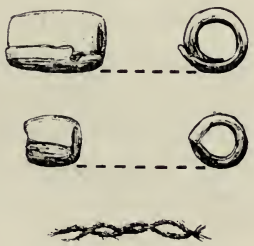
MOUND 12 (Fig. 3, E)

This conical mound was 31.0 feet in diameter and 2.6 feet



A. Elk antler arm band, Md. 10.





B. Copper beads and cord from necklace, Md. 14. (2 x scale)

C. Quartzite knife Md. 14.

FIG. 7. Artifacts, Wakanda Park mound group.

in height. The old humus layer formed the mound floor. The principal feature consisted of a bundle reburial of bones representing 4 individuals disposed in two concentrations, one above the other in the body of the mound about 2.0 northeast of its center. The upper concentration was encountered 0.33 foot below the surface and consisted of the fragmentary remains of two skulls with mandibles, representing an adult male and an adult female, and one fragmentary tibia. The lower concentration of bones extended almost to the mound floor and contained all of the major long bones of the individuals represented by the skulls in the upper concentration, 2 pelves and a few vertebra. It also contained an extra tibia and femur and 2 additional humeri which together with the tibia of the upper cncentration, represented a third individual whose sex could not be determined with certainty, but who was probably a female as the bones were about as lightly constructed as those of the other female. The bones of the third individual were much more fragmentary and eroded than the other individuals represented and were rodent gnawed, possibly indicating that a longer time had elapsed between death and reburial. The bones of the male were robust. A fourth individual was represented in the lower concentration only by the midsection of a very robust femur and was undoubtedly a male. A very careful search for a pit outline was made in the vicinity of the bundle reburial but none was found. It is, therefore, interpreted an inclusive burial made during mound construction.

Two fragments of gnawed deer mandible were found in the upper concentration. The mound fill contained a chert flake, a quartzite flake and 3 grit-tempered, cord-marked bodysherds. Two of the latter bear cord-wrapped stick impressions, one also has a row of small punctates made with the end of a small stick. Fig. 5, D).

MOUND 13 (Fig. 4, A)

The diameter of this concial mound was 30.0 feet and its height, 2.5 feet. It could not be determined if the old humus layer were present as the mound floor. A subfloor pit 4.2 x 5.5 feet, oriented N40°E, was centrally placed. Nothing was found in the pit. Four feet south of the mound center and 2 feet

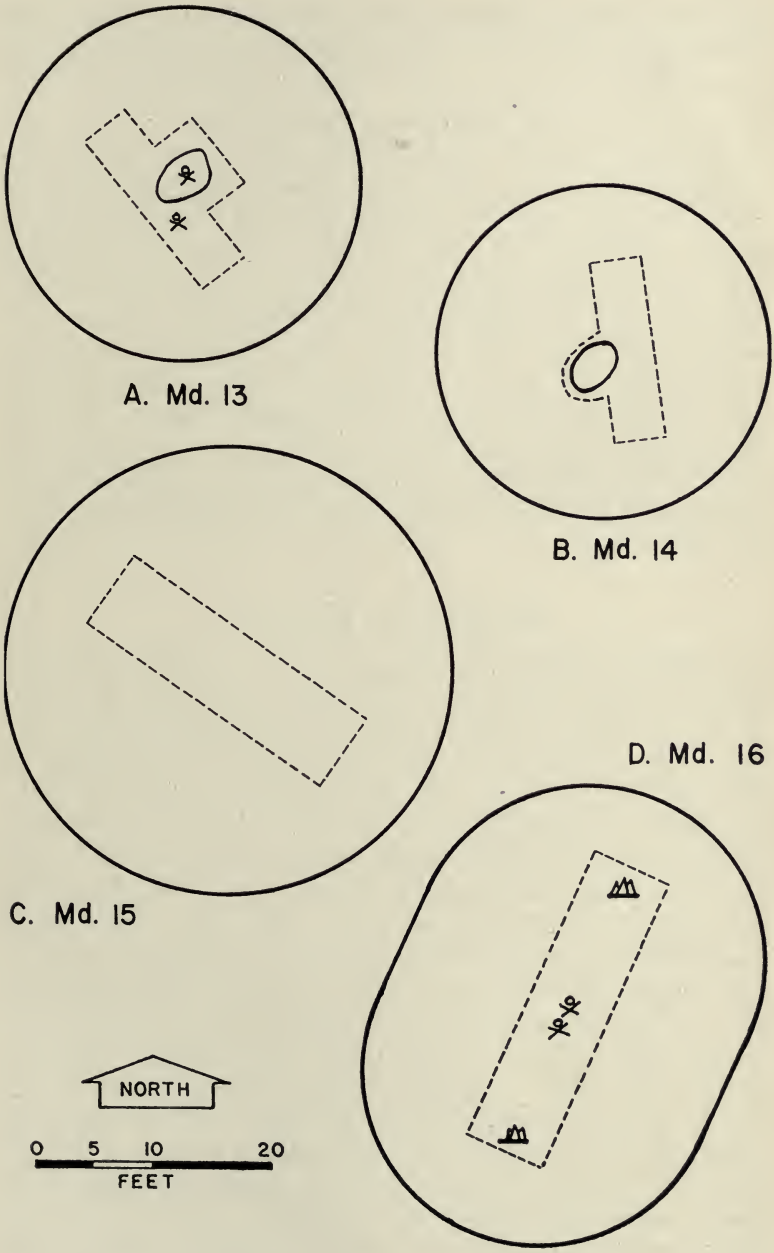


Fig. 4.

south of the edge of the pit, at a depth which approximated surrounding land surface and would be about the level of the mound floor, a skull was found placed on its right side and facing west. Teeth development indicated that it was a pre-adolescent individual. The mandible was missing. Nearby, to the east there was a fragmentary femur. Elsewhere in the mound, at the same level as the skull, several small bits of charred wood and a few bits of burned human bone, including a long bone fragment and skull parts were found. From these meagre remains it is difficult to reconstruct the nature of the original contents of the mound. The skull and femur may represent all that was left of a more complete bundle reburial or only the parts that had been originally interred. The few burned bone fragments could be accidental inclusions or possibly disturbed from some feature contained in an unexcavated portion of the mound. A chert scraper was found in the mound fill (Fig. 5, E).

MOUND 14 (Fig. 4, B)

A conical mound 28.0 feet in diameter, 1.7 feet in height. The old humus was present as the floor of the mound. There were a few flakes, charred wood fragments, small pits of calcined human bone, and the blade of a small serrated chert projectile point (Fig. 5, F) in the mound material. The only feature was an oval subfloor pit, 2.5 x 4.5 feet, oriented N45°E, a little southeast of the mound's center. The pit fill contained a medium-sized triangular quartzite knife, 63 x 54 mm. (Fig. 7, C). On the floor of the pit, 2.5 feet below the mound floor, several green-stained teeth and small bone fragments, including a vertebrae, were found. This was all that remained of a burial. The green stains were caused by the presence of a copper bead necklace. Sixty small barrell-shaped beads of rolled sheet copper were found, ranging from 6 to 11 mm. in length and from 5 to 7 mm. in diameter. In the making of some beads the ends of the sheet had been turned up to butt against each other, but in most cases they overlapped from 2 to 4 mm. (Fig. 7, B). The beads were found individually and in small segments of the original necklace with up to 8 beads in a lineal alignment. The copper salts had also acted

as a preservative on the stringing material. This was composed of a pair of thin simple cords of vegetable fiber each twisted in a clockwise direction.

MOUND 15, (Fig. 4, C)

The diameter of this conical mound was 38.0 feet, the largest of the Wakanda Park group, but it is possible that the diameter had been enlarged by soil from a large pit dug by relic hunters in the center of the mound. The height was reduced to 1.3 feet. The disturbed area encompassed a large portion of the mound and erased any feature which might have been present in the central area. The 7.0 x 24.0 foot trench excavated across the mound revealed a few bone fragments indicating the former existence of a burial and several chert and quartzite flakes. Twelve grit-tempered, cord-marked bodysherds and a simlar rimsherd with a squared lip and punctate and cord-impressed decoration (Fig. 5, G) were found in this mound.

MOUND 16 (Fig. 4, D)

The long axis of this oval mound was oriented N20°E. The length was 40.0 feet, width 30.0 feet, and the height 2.9 feet above the floor formed by the old humus. Our 7.0 x 26.0 foot trench along the length of the mound disclosed a ceremonial fireplace, similar to those of Mound 6, on the floor at each end. A skull, without mandible, resting on its right side facing west and flanked on its northwest and southeast by femora was placed in the exact center of the mound 0.5 foot above the mound floor. Both the long bones and the skull had been gnawed by rodents. Two feet southsoutheast of this skull and also on the mound's major axis lay another skull 0.9 foot above the mound floor and also on its right side facing west. Six teeth were found 2.0 southsoutheast of the latter skull. Just to the east of the teeth but lying directly on the mound floor were several lineal concentrations of charred wood, evidently the remains of burned sticks. Samples were taken up for a radiocarbon age determination. The mound material contained a number of chert and quartzite flakes, several grit-tempered. cord-marked bodysherds, and the Madison Cord-Impressed rimsherd shown in Fig. 5, H.

MOUND 17

This conical was 26.0 feet in diameter and 1.3 feet in height. Due to the presence of a very large rock placed on its summit by city park employes this mound was not excavated.

RADIOCARBON DATE

The charred wood sample (M-814) from Mound 16 was processed at the University of Michigan Memorial-Phoenix Project Radiocarbon labratory, Prof. J. R. Crane, Director. The date is 750 + or − 200 years ago, or 1208 A. D. + or − 200 years (James B. Griffin, personal correspondence, 1959). Thanks are due to the Menomonie Rotary Club and the Dunn County Historical Society for financing the dating.

SUMMARY AND INTERPRETATIONS

Although no mounds of effigy shape were contained in the Wakanda Park group, the details of mound construction, inclusive features, locations and types of burial indicate that these mounds should be assigned a classificatory position close to, if not within, the Effigy Mound culture (i. e., Aspect). The data are summarized in Table 1. The traits characteristic of Effigy Mound culture will be briefly reviewed, followed by a discussion of those traits which are aberrant or have not been previously listed for this culture as defined by McKern and Ritzenthaler 1949, and Rowe 1956. The spatial, temporal, and cultural positions of this site are then discussed.

It is known the mounds of round and oval outline, in addition to those of effigy outline, were also built by the Effigy Mound culture. In fact, of the 483 mounds contained in the 13 Effigy Mound groups analyzed by Rowe (1956), 267 were round and 17 were oval in outline. However, in contrast to Wakanda Park, each of the 13 groups did contain some mounds of effigy outline. The absence of effigy mounds at Wakanda Park may be due to its position on the northwestern periphery of the Effigy Mound area or its late temporal position.

The Wakanda Park mounds were built by simple accretion over an area of definite round or oval outline which may or may not have been defined by removal of the sod prior to construction. The primary internal features were burials, un-

TABLE 1, SUMMARY OF TRAITS, WAKANDA PARK MOUND GROUP, Dn 1, WISCONSIN

Mound Number	Round Outline	Oval Outline	Diameter or Size in Feet	Height	Old Humus Present	Subfloor	Burial on Mound Floor	Burial in Mound Fill	Primary Flexed Burial	Bundle Reburial	Partial Cremation	Burial Present but Type Indeterminate	Altar	Ceremonial Fireplace	Grave Goods	Illustration, Fig(s).
1	X		25	2.0	X							X				2A
2	X		25	1.4	X	X						?				2B
3		X	21x47	2.3	?			X		X						2C
4*	?				X											
5	X		30	2.6	X	?						?				2D
6		X	24x45	2.5	X	X				X			X	X		2E, 5A
7	X		25	2.5	X		X			X	X		X		X	3A, 5B
8	X		30	3.3	X					INT					INT	3B, 5C, 6
9*	X		15	1.2												
10	X		22	2.5	0	X						?			X	3C, 7A
11		X	20x27	2:5	0	X			X							3D
12	X		31	2.6	X			X		X						3E, 5D
13	X		30	2.5	?	X	X			X	X					4A, 5E
14	X		28	1.7	X	X						X			X	4B, 5F, 7B, 7C
15	X		38	1.3	?							X				4C, 5G
16		X	30x40	2.9	X		X	X		X				X		4D, 5H
17*	X		26	1.3												

* Not excavated X Present 0 Absent ? Indeterminate INT Intrusive

questionably the singular purpose of their construction. Fireplaces and cobblestone altars present in the mounds most probably figured in ceremonies attendant with the disposal of the dead.

Burials were located in subfloor pits, on the mound floor, and above the floor in the fill in the mound. Methods of disposal included single primary flexed interments in subfloor pits, partial cremation on an altar and under inderminate conditions, and bundle reburial in both single and multiple interments. Grave goods were rare — only 3 or 4 artifacts were apparently intentionally placed with burials.

Traits which heretofare have not been found at Effigy Mound sites are represented both in burial customs and artifacts. The one obvious departure in burial custom is the frequent burial of only a small portion of the body (or skeleton). Several instances can be cited where the skull only or leg bones only, or some other small fraction were given a careful interment. Although soil conditions were poor in terms of general bone preservation, this cannot be the reason for the lack of other bones in these partials burials. It is entirely possible that the bones of one leg found in Mound 6 belonged to an individual whose other leg bones were included in the bundle of bones of 5 legs found in Mound 3.

Until this work, no copper beads have been found in mounds assigned to the Effigy Mound culture; antler arm bands have not been found in any context in Wisconsin; and clay cremation masks have been found only in the Red Cedar River focus of Wisconsin Hopewellian culture.

Artifacts found in the fill of the mounds are accidental inclusions, and all that can be definitely said about them is that they predate construction of the mound in which they are discovered. The Madison Cord-Impressed rimsherd found in Mound 16 (Fig. 5, H) is of an Effigy Mound culture type. Therefore this mound was constructed after a time when one type of Effigy Mound culture pottery was made. The rimsherd found in the fill of Mound 6 (Fig. 5, 5) bears decoration in the same pattern but in a different technique (incising). Almost identical sherds were found in the fill of Mound 4 at the Diamond Bluff site in Pierce County (Maxwell 1950; Univer-

sity of Michigan Museum of Anthropology photographs, neg. nos. 8801, 8804, 8805). The fill of this large conical mound at Diamond Bluff also contained shell-tempered pottery of Mississippi type and it is interpreted as being built at a relatively late time.

The antler armband from Mound 10 is similar to ones from Minnesota, Nebraska and elsewhere in the Plains Area, all of which were found at rather late sites.

Thus, these data and the radiocarbon dating of Mound 16 are compatible. The Wakanda Park mound group is interpreted as being a relatively late manifestation of the Effigy Mound culture. The significance of the clay cremation mask is not known. According to my present views,* the Effigy Mound culture developed in southern Wisconsin, probably as a result of Middle Woodland influences not yet understood, and flourished there from very late Middle Woodland times well into Late Woodland times. It seems possible that the penetration of Mississippi cultural groups into southern Wisconsin, probably as early as 1000 A. D., was not entirely a peaceful one and that after a period of at least mild conflict, some Effigy Mound people retreated northward. Presumably the Wakanda Park mound group represents such a manifestation.

REFERENCES CITED

COOPER, L. R. 1933. The Red Cedar River Variant of the Wisconsin Hopewell Culture. **Bulletin of the Public Museum of the City of Milwaukee, Vol. 16, No. 2.**

MAXWELL, MOREAU S. 1950. A change in the Interpretation of Wisconsin's Prehistory. **Wisconsin Magazine of History,** Vol. 33, No. 4, pp. 427-443.

McKERN, W. C., and Robert E. Ritzenthaler. 1949. Trait List of the Effigy Mound Aspect. **The Wisconsin Archeologist,** n. s., Vol. 30, No. 2, pp. 39-48.

ROWE CHANDLER W. 1956. The Effigy Mound Culture of Wisconsin. **Milwaukee Public Museum Publications in Anthropology,** No. 3.

---

* to be published in greater detail in the next issue of this journal.

THE TOTTEN SITE: A POSSIBLE NON-POTTERY SITE IN WALWORTH COUNTY

Robert F. Maher

University of Western Michigan, Kalamazoo

In the early part of September in 1951, the author conducted a single day's excavation at a site on the Lyman Totten farm, which is located six miles northwest of Delavan on Highway 89. The brief investigation produced signs of occupation in the form of stone chips and charcoal fragments, but no artimacts were uncovered. Mr. Totten, however, was kind enough to loan me the collection he had made from the area so that I might examine and record it in detail. This is a report on that examination.

At the time that it was in my possession, the Totten Site collection consisted of forty-seven artifacts of chipped and ground stone. Pottery was completely absent, and Mr. Totten informed me that although he had looked over the area many times, he had never encountered a potsherd at the site location. This, coupled with the fact that my own excavations produced many chips but no sherds, supports the interpretation that the Totten Site is a non-pottery site. There is, however, other evidence which prevents a clear decision on the matter. In a recent communication, Mr. and Mrs. Totten have informed me of early reports of pottery discoveries on other parts of the land which is now their farm. While there does not appear to be a direct or necessary connection between the limited occupation area which is here designated as the Totten Site and the reported pottery finds on the same farm, one must still admit the possibility of association.

Chipped Stone Artifacts

The artifact series is relatively homogenous, with its main category consisting of flaked-stone tools, mostly of a gray or brown chert. Projectile points are the most numerous, totaling thirty-four identifiable specimens, which can be grouped into two types. Thirteen of the points are of the lanceolate form illustrated in Figure 1. All of these have a straight or slightly concave base with the exception of the single-shoul-

Figure 1. Lanceolate form projectile points from the Totten Site.

Figure 2. Side-notched projectile points from the Totten Site.

dered specimen in the center of the photograph and a point which does not appear in the illustration and may be a knife rather than a projectile point. The length range for the lanceolate series is from 40 to 56 mm and the width from 17 to 31 mm.

The second point type is the side-notched form represented in the Totten Site collection by twelve specimens and illustrated here in Figure 2. These tend toward a smaller size range than the lanceolate type. The length of the unbroken side-notched specimens ranges from 30 to 46 mm and the width from 15 to 30 mm.

An examination of Figures 1 and 2 will show that there is some distinct variation within each of the type series, and it is possible that a larger sample would show some of the differences to have a typological significance. Among the lanceolate group, for example, two (see the point on the extreme right of Figure 1) show what might be a crude stem, and four of the side-notched type could be called corner-notched or stemmed (see the point second from the right in the bottom row of Figure 2). It is also possible that the single-shouldered lanceolate is a lone representative of a distinct type. Nine of the points which were too fragmentary for typing might also have shown a more complicated situation if they had been recovered in better condition. In general, however, the point complex is not a particularly variable one. From what has been said above, it can be seen that differences in size, form and material are present, but they are not very great.

Figure 3 shows three specimens which perhaps can be called blades as well as anything else, since the term does not demand a specific designation of function. The artifacts pictured might have been spear points, knives, or scrapers. Whatever their function they are rather similar in their crude, broad lanceolate form, their material, and their medium quality workmanship. In size they range from 51 to 67 mm in length and from 36 to 40 mm in width.

The remaining chipped stone tools which can be identified are a straight-based, straight-sided drill of pinkish-grey chert, 46 mm long, and a bunt which was apparently made from a broken side-notched point. The latter specimen is of light

Figure 3. Blades from the Totten Site.

Figure 4. Ground stone axes from the Totten collection.

grey chert and has a measurement from base to edge of 26 mm and from side-to-side of 29.

The two ground stone artifacts shown in Figure 4 pose some problems. It is not certain that they came from the same area as the other specimens. The failure to connect them positively with the rest of the complex is in the mind of the collector, but it is given support from what is known of non-pottery sites elsewhere. * In any case, both are grooved axes but are not otherwise very similar. As can be seen in the illustration they differ considerably in form. In addition, the smaller axe (length 87 mm) on the right is generally better made and has a polish which the other specimen (length 100 mm) lacks. Although the material has not been identified for either, it is nevertheless clear that they are different in this respect as well, the smaller axe being lighter in color and weight. In addition to the two axes, there is also an oval specimen of stone 79 mm long and 58 mm wide which may have been worked by grinding. It is ungrooved but shows a polish which may have come from use as a grinding or polishing stone.

Taken as a whole, the Totten Site collection is characterized by its lack of artifacts other than stone tools and the rather narrow range of variability in these. The information available tends to support the interpretation that it is a non-pottery site containing the remains of only one or two cultural complexes or developmental horizons. Verification of this view, of course, can only be achieved by more extensive work than that which has so far been attempted.

---

* Editor's note: Grooved axes have been found elsewhere at Archaic sites.

A SEGMENTED, CIRCULAR FIRE PIT ON THE DUNHAM AREA OF THE RADKE-DUNHAM SITE

Jack Steinbring and Franklin Farvour

Introductory Remarks

A feature excavated near Rush Lake, Wisconsin in the fall of 1956 and the spring of 1957, with the assistance of a party of graduate students from the University of Wisconsin, has remained since that time an enigma to all interpretive efforts.[1] Because of its curious nature, and our inability to secure comparative data over what seems to be a reasonable length of time,[2] we are prompted to describe this feature . . . even at the expense of promoting some controversy.

The site upon which this feature was exposed has already been partially reported upon by the writers in the March, 1957 issue of **The Wisconsin Archeologist.** The entire Radke-Dunham site occupies a one-time peninsula which jutted out approximately 300 yards into a much greater Rush Lake during early post-glacial times. Its maximum topographic expression probably occurred immediately after the retreat of the Valder's ice between 9,000 and 8,500 B. C. (Quimby, 1958). The entire length of this old peninsula has been under limited and alternating periods of cultivation only during the past 45 years, and it was the exposure of charcoal traces by unusually deep plowing which first called our attention to the presence of this structure. A series of test pits 100 feet to the west along the highest elevations produced no such evidences prior to this time.

Excavation and Description

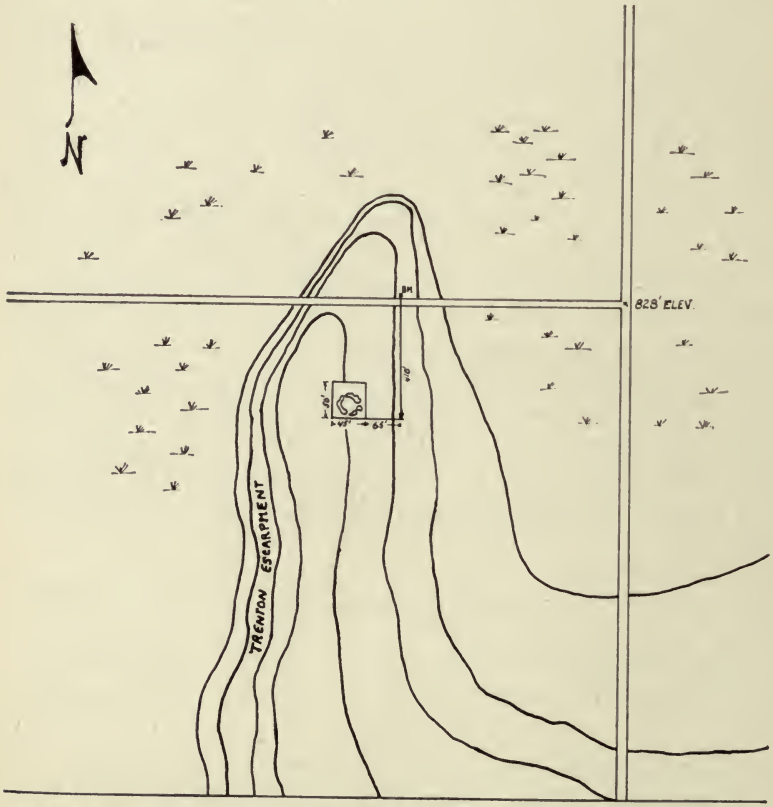
The feature is best described as a circular, segmented pit containing dense concentrations of charcoal. Initially, upon

---

[1] We are indebted to Prof. David A. Baerreis for his helpful comments and the loan of the University of Wisconsin equipment, and to the Messrs. Donald Murie, George Kammerer, and Alan Weil who participated in the excavation.

[2] This feature was first briefly discussed in an address to a meeting of the Wisconsin Archeological Society in May, 1957, at Madison.

the exposure of charcoal traces, one entire, isolated segment was revealed. A continuation of test pits from this segment (South, see Fig. 1.) toward the northwest and east revealed a circular continuity, and assistance from the University of Wisconsin was solicited and received. After carefully surveying the area concerned from data already produced for the Radke, or north-lying portion of the site, a detailed exposure of the entire feature was conducted. This consisted of laying bare the horizontal surfaces of all the segments and a quarter (SE) of the interior. The surfaces of the various segments (see Map 1 and Fig. 1 for form and position) revealed, in every case, a matrix of fine grained charcoal, pow-



MAP. 1. Radke-Dunham peninsula, Wn2, Rush Lake, Wisconsin. SE¼ of the NE ¼ of Sec. 35, Twn of Nepeuskun, Winnebago Co. Approx. scale: 1" equals 500'. Contour interval: 5'.

dery, grayish-brown clay, and occasional flecks of charred wood perhaps ½ inch in diameter and an inch or so long. The clay would appear to be the product of percolation from a 2 to 3 inch zone of reddish-brown clay lying between the surface of the feature and the base of the plowline (See Photo 4.). In several cases plowing and shallow drainage have obscured this zone, but its presence was clear in quite a number of arbitrary positions effected both prior to and during the outlining phase of the excavation. This clay is also the basement material into which the pits were originally dug, and proceeds in depth for 2 to 4 feet until it meets a disintegrating, limestone pebbled till. Although gravely important to the proper interpretation of this feature, a thorough geological analysis was a far too ambitious venture for our limited time

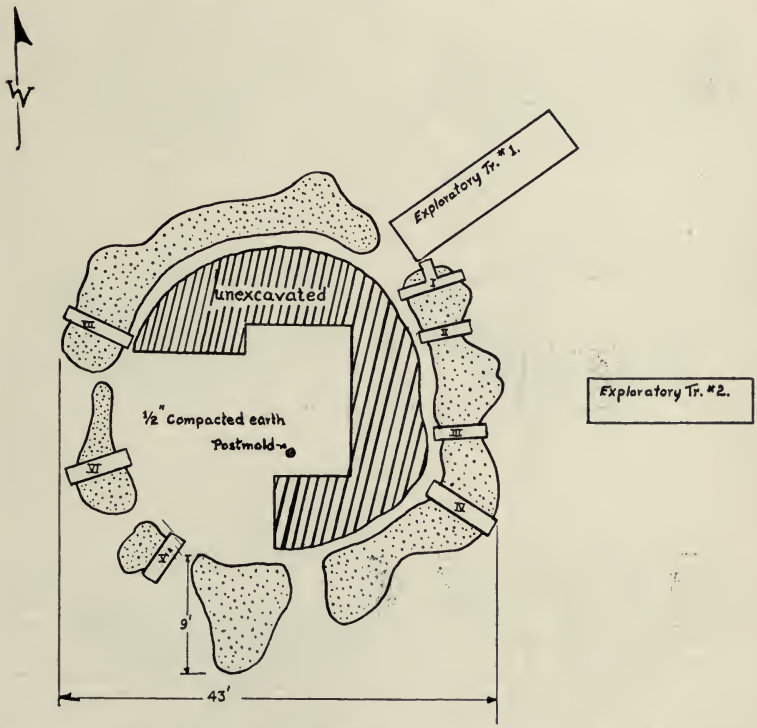


FIG. 1. Segmented, Circular Fire Pit, Wn2, Rush Lake, Wisconsin. Stipled areas indicate dense pit deposits of charcoal. Profiles, indicated by Roman numerals, may be seen in Fig. 2.

and technical abilities. We were forced, in fact, to conclude our work because of cultivation, with the added expense of power excavating equipment.

The exposed outline reveals three large segments and two smaller ones, each separated by what would seem to be premeditated entries. Cross sections (See Fig. 2) excavated at the terminals of the segments indicated an abrupt depth profile, rather than one of gradual rise. The apparent scalloping, or billowing out of the outer perimeter, of these segments also seems intentional in that the depth of the constrictions is very nearly the same as the wider portions. And, again there is no gradual lessening of depth for the broader portions of the segments.

The maximum outside diameter of the circle is slightly over

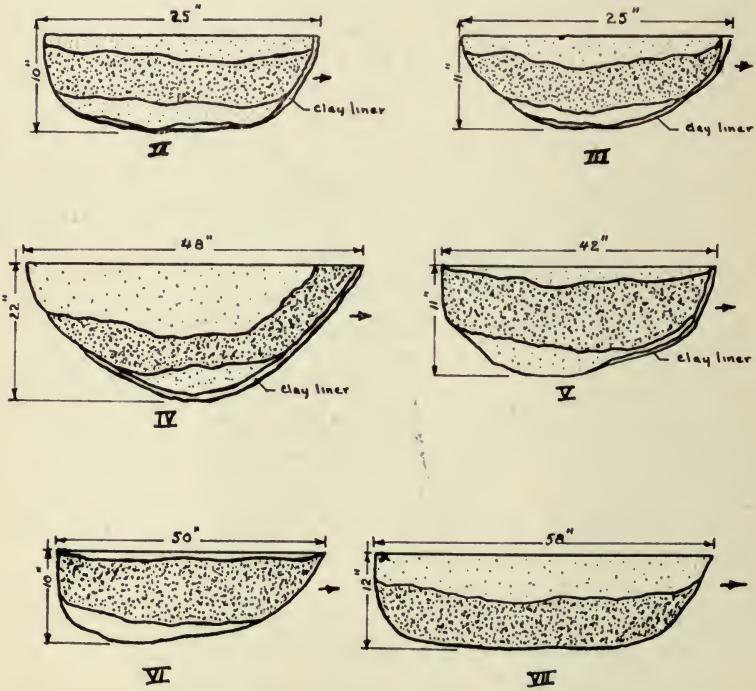


FIG. 2. Pit profiles, Feature 1, Wn 2, Rush Lake, Wisc. Denser stipling indicates position of coarse charcoal levels. Arrows point toward interior of fire circle. Horizontal location of profiles may be observed in Fig. 1. Profile number 1 will be seen in Photo 1.

43 feet with the other outside diameters varying considerably according to the configurations of the outer perimeter. The inside diameter is quite regular at about 36 feet with no variations exceeding a few inches. The pits themselves vary considerably in width from less than 2 feet at a construction to 9 feet at the somewhat disturbed region of the east segment.

Each of the segments occurs as a pit varying in depth from 11 to 24 inches. In the largest segment (North) there appears on the interior periphery a half-inch lens of fire hardened, grayish-brown clay, suggesting, perhaps, that the pit had been first dug and then prepared with a sort of lining. This clay lens is best observed on the interior wall, but is also seen to extend along the floor of the pit where it commences to diminish toward the exterior. It is no longer visible at the surface on the outer perimeter.

Another interesting observation concerning the degree to which design can be inferred from the feature is the existence of a one-half inch layer of compacted clayey earth over the entire excavated portion of the interior of the circle. This horizontal lens consists of a fairly plastic clay of a more grainy texture than either above or below it. It is also slightly lighter in color, having a tan or sandy cast. To enforce the idea that separations between segments be some sort of entries, this lens of compacted earth is seen to extend through each of them diminishing at a point somewhat beyond the outer perimeter. Although not nearly as deep, the consistency and general "feel" of this lens seems very much like that of a lodge floor. Not a single artifact, however, was recovered during the entire excavation with the exception of one drill fragment found within the plowzone above the west segment.

Each of the pits or trenches exhibits a kind of stratified sequence, probably resultant upon the order of firing. For approximately the upper third of each pit profile is to be observed a finer grained matrix of charcoal, ash, and earth than the third below it. Although there is no precise line of demarcation, the middle third of the profile produces a matrix of much larger particles of charred wood, ash, and fire hardened chunks of clay which in some cases have been vitrified by extreme heat. The larger fragments of charred wood range

in thickness from 1 to 2 inches and in lengths from 1 to 12 inches. The size of included rock particles (usually a limy sandstone) also seem somewhat larger. The bottom third of the profile then experiences a change to a finer grained matrix much like that of the top one, but with less evidence of percolated clay. In none of these layers, however, was there found any charred bone, or other evidence of utilitarian, cultural orientation. No stones larger than one and a half inches in diameter were recovered anywhere within the entire feature, and even these were rare and occasional.

The sequence of variable consistencies could very well be related to the creation of fires within the pits, smaller debris being first placed down for rapid combustion and larger material later to produce greater heat. The top, finer grained

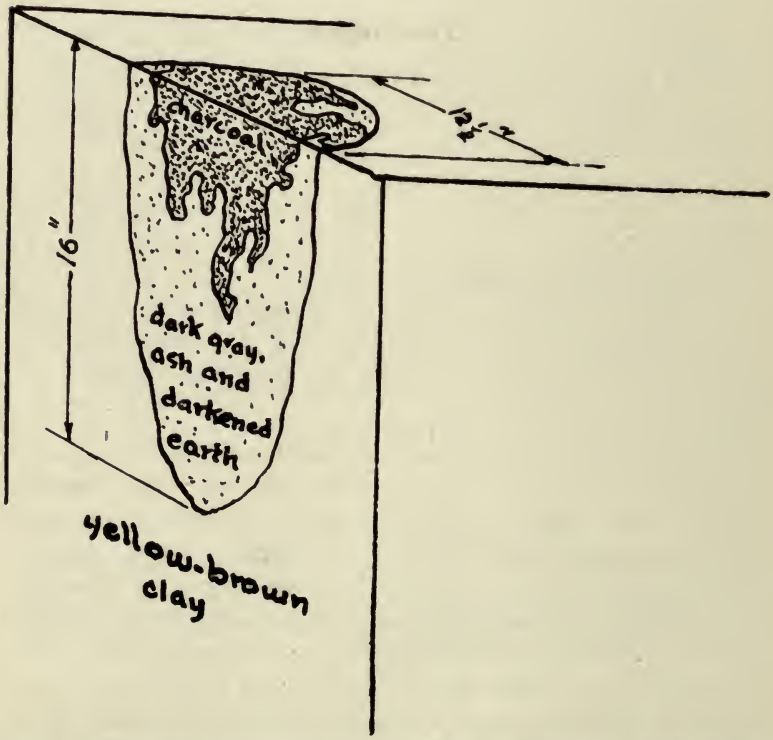


FIG. 3. Postmold situated within interior of Feature 1, Wn2, Rush Lake, Wisconsin.

zone can be explained by many years of surface abrasion by wind and water action.

Except for the presence of one large and well defined postmold, no other evidence of structural intent can be inferred. The postmold (Fig. 3) occurred at a depth of only one-half inch below the plowline at a position 15 feet seven inches directly south of the south interior wall of the north segment and 17 feet 9 inches directly west of the northernmost limit of the east segment. It is 16 inches deep and 12½ inches in diameter. It is composed of charcoal to a depth of 8 inches where it begins to grade from a gray soil discoloration to a yellowish clay. It is perfectly vertical in all profiles and the charcoal concentration of the upper position is less dense than that of the circle proper.

Topography

The feature itself lies upon the lee slope of the Radke-Dunham peninsula. Vertically it is apprximately 10 feet below the highest elevations 1-200 feet to the west. The peninsula itself is formed by the long rib of a limestone escarpment facing west which provides considerable shelter for the lee slope against prevailing westerly winds. Thus the site selected by the architects of the fire circle was advantageous both for the protection afforded it by its dramatic position on a commanding landmark and its sheltered elevation. One can easily infer the imposing spectacle presented by these fires to the great open areas to the east.

The present gradient upon which the feature was exposed is slightly less than 10 degrees. Although the original surface gradient into which the circle was dug is not known, some degree of slope can be inferred from the drainage disturbances of the easternmost extensions of the east segment. These disturbed areas were also covered by a 2 to 3 inch zone of clay apparently following the abandonment of the feature.

Trenches were extended by our party both to the north and the northwest in an effort to determine the existence of further elements of the feature or the presence of other features. Both of these efforts proved negative.

SPECULATIONS

Preliminary Statement

The major problem in any interpretation of this feature arises out of the dearth of general comparative data. Since no features of this kind have been described up to the present

Photo. 1. Profile number 1, across west end of north segment of Feature 1, Wn2, Rush Lake, Wis. Photo orientation: East.

time, and there occurred within the feature no associated artifacts, it is impossible to present any conclusions concerning cultural affiliation, geographic distribution, and temporal position (except tentatively through very limited excavational evidence). This section, then, has been entitled Speculations in conformity with the very limited sources of feature detail having inferential value. The remarks of this section, although based upon inferences drawn from the excavational data, grossly exceed it in the absence of any support from comparative material. The final and unquestioned justification for this entire report rests solely in its dissemination of new knowledge of the world of archaeological inquiry. It is hoped that the wisdom of such a perspective be reflected in the future by the accumulation of sufficient comparative data necessary for the interpretation which cannot now be undertaken.

Summary of Evidence and Review of Current Speculations

There was nothing excavated from within the entire area of the feature in any way suggestive of White authorship. On the other hand, there was pitfully little suggestive of Indian. That it occupies a position within a site yielding numerous Indian arifacts does not lessen the problem, since association with these cannot be proven. If the 2 to 3 inch zone of clay which lies between the soil zone and the feature be regarded as a separation in time from the surface finds, the presence of Archaic implements and the absence of pottery only serve to complicate matters. The relatively small size of timber within the middle matrix of the pit profiles provides the possibility of aboriginal exploitation. But, it doesn't rule out White since no cut-ends were recovered. The presence of some kind of pole near the center of the circle seems to be an Indian trait, but it was first discovered only a half-inch below the plowline. Taking that half-inch away by drainage or accident, the post could have been placed there just long enough to have completely decomposed — perhaps no longer ago than 45 years when the Radke-Dunham peninsula first went under plow.

If this had been the remains of a burned down settler's cabin, or the Annual Firemen's Barbecue of 1859, or an abandoned,

lightning-ravaged silo, we would have expected to find at least a few old nails, some broken glass, charred bones, iron bolts, or other such items indicating White authorship. An assignment to Indian culture on the basis of there being none of these present, however, should be viewed only as supplementary to the category of total form and construction which becomes exceedingly difficult to interpret as White. The following remarks are intended as a review of the various no-

Photo. 2. North segment of fire circle looking west.

tions which have arisen in the minds of students well acquainted with the feature.

North American Indians, with a special emphasis in California and along the Northwest Coast, went in for ritual steam baths. These baths were taken in specially constructed huts of timber and earth, upon the floors of which were placed many red hot stones. Water was thrown upon the stones and the steam created was trapped in the hut for the benefit of the

Photo. 3. West end of north segment of fire circle looking WSW.

users. Frequently the bathers would emerge from the steaming hut and plunge into a nearby stream or pool. If, as has been suggested, our feature at Rush Lake, is a steam hut, it would have to be a greatly modified variety of those which are best known. There was only one post to support a roof and there were no stones. Traditionally steam huts were also occupied for long periods of time and can be identified even as to culture by numerous artifacts. Our feature exhibits evidence of only a very temporary nature — perhaps for only a single event. The heat produced by the blazing circle over 40 feet in diameter must certainly have produced plently of perspiration on the part of anyone in or near it. That someone was in or near it could be inferred, however, from the lens of compacted earth covering the interior and the various openings, which so remarkably resembles a house floor.

That this structure might have been used as a great cooking fire (whether White or Indian) finds even less support in that no charred bones, or other utilitarian debris of any kind was found within the pits. There were also no postmolds evident in the trenches which might presuppose the position of racks upon which food might have been suspended for such cooking. The absence of any tools would, of course, greatly limit the value of such interpretation. Even if bone debris had been present in the charcoal and ash filled pits, the general circular symetry of the pit arrangements and the care with which each was originally excavated would also tend to seriously negate an interpretation of a very impermanent White cooking structure.

Another interpretation has involved the burning of brush attendant upon the early clearing of land upon the Radke-Dunham peninsula. It is quite true that, on occasion, surplus brush was randomly drawn into large circles and burned. It would be a gross unlikelihood, however, for these early pioneers to have carefully excavated large trenches having scalloped perimeters in the general pattern of a neatly arranged segmented circle.

Even though circular structural designs are rather widespread among New World prehistoric cultures, none of them have been described which exhibit sufficient similiarity to our

own in order that even such a general assignment could be postulated with conviction. This circular character is to be observed in the Perch Lake mounds of New York described by Ritchie (Ritchie, 1944), and in some earthworks along the Kickapoo River described by a French explorer during the early part of the last century. The Perch Lake mounds appear also to be very vaguely similiar to mounds located on the Lasley's Point Site at Lake Winneconne approximately 14 miles north of the Radke-Dunham site and probably prehistorically communicable by water. These were described by Art Kannenberg in his unpublished field notes. Although not segmented, the mounds described by the French explorer do exhibit a kind of scalloping and, in one mound, there is to be

Photo. 4. View showing 2-3 inch zone of undisturbed clayey earth separating top surface of fire circle and plowzone. This is at west end of south segment looking west.

observed a concentric arrangement with an inner and outer ring. The mounds discovered in New York are composed of boulders with a center consisting of a basin-like depression, a description remarkably similar to the features of the Lasley's Point Site. Great circular enclosures are reported among Hopewell sites, and various ceremonial circles, although incapable of producing permanent, tangible evidence, are a part of practically everyone's knowledge of historic American Indian tribes. This last observation, however, probably provides the best current functional interpretation of our own feature.

The absence of utilitarian items and any cultural debris, especially cooking refuse, certainly promotes the idea of a ceremonial nature. Also the lack of any evidence of continued use, best evidenced, we are afraid, by the lack of that same cultural debris, also supports the contention for a ceremonial use. The design itself, the apparent entries, the compacted, floor-like interior, and the commanding, but still protected, geographic position tend to suggest ceremony. The writers themselves, however, while agreeing on the probable Indian authship of this structure, differ in their functional interpretatons. We will probably never know to what ends this strange structure was created. We will probably never know with what prehistoric or historic cultural group it can be identified. But, the spectacle will no doubt rest with some of a richly impressive circle of fire, situated on a widely commanding hillside, through the blazing streamers of which pass the participants in a prehistoric drama of exciting proportions.

REFERENCES CITED

HENSHAW, HENRY W.
1910 "Sweating and sweat-houses", Bureau of American Ethnology Bulletin No. 30. pp. 660-663.

KANNENBERG, ARTHUR
1939 Unpublished field notes for the Lasley's Point Site, filed at the Oshkosh Public Museum.

QUIMBY, GEORGE I.
1958 "Fluted Points and Geochronology of the Lake Michigan Basin, AMERICAN ANTIQUITY, Vol. XXIII, No. 3, P. 253.

RITCHIE, WILLIAM A.
1944 THE PRE-IROQUOIAN OCCUPATIONS OF NEW YORK STATE, Richester Museum of Arts and Sciences, p. 315.

STEINBRING, JOHN H. and FRANKLIN B. FARVOUR
1957 "The Radke Area of the Radke Dunham Site", THE WISCONSIN ARCHEOLOGIST, n. s. Vol. 38, No. 1, pp. 5-9.

SUMMER FIELDWORK. Ronald J. Mason, Neville Public Museum, excavated the Renier site, a campsite containing projectile points resembling Eden and Scottsbluff types. A scattered cremation burial was also found. The site's location on a beach of Algonquin age near Green Bay may be a clue to dating.

Warren L. Wittry, State Historical Society, cooperating with the Wisconsin Archeological Survey and the Oshkosh Public Museum conducted salvage operations at an historic site on Lake Butte des Morts. Both aboriginal and trade artifacts were found in 100 cache pits of this stockaded village.

Robert L. Hall, Lincoln-Tallman Museum, did some salvage excavating of a Middle Woodland midden on the Rock River in Rock County. Robert J. Salzer, U. of Wis. grad student, is working at another Middle and Late Woodland site, also on the Rock River, in Jefferson County. These two sites provide information on the Hopewellian penetration into Wisconsin from the south.

The Society picnic at Aztalan State Park, on August 29, was attended by over 50 members and friends. The excavations of Lawrence College students under the direction of Chandler W. Rowe were viewed. A small rectangular house of wall trench construction had been uncovered. The work was under the auspices of the Wisconsin Archeological Survey in cooperation with the Wisconsin Conservation department.

At the Society's September meeting in Milwaukee, fraudulent artifacts were displayed and discussed. Methods of detecting fake birdstones were pointed out by Kirk Whaley. Collectors have realized for some time that the nationwide problem of the manufacture and sale of fakes is most serious. Wisconsin and some other states have statutes for protection, but the business continues. Sometimes it is possible to get good documentation of the discovery and history of a specimen , but

it is also possible to fake a "pedigree." **Caveat emptor:** let the purchaser beware!

W. L. W.

NEW MEMBERS

Mrs. Henry E. Cooke, Jr., Helm Road, Dundee, Illinois.

John E. Dallman, 837 Burbank Place, Madison, Wisconsin.

Mrs. R. W. Determan, Box 453, Warren, Illinois.

Charles S. Goodall, 871 Eldorado, Winnetka, Illinois.

Harold A. Huscher, 1517 "O" Street, Lincoln, Nebraska.

M. J. Henderson, 316 W. Sheridan, Fremont, Michigan.

L. Kannenberg, Putnam, Illinois.

Norbert Lauer, 704 Broad Street, Menasha, Wisconsin.

Kenneth P. Lemke, 216 S. George St., Mt. Prospect, Illinois.

Peter E. Mershdorf, Box 486, Wabeno, Wisconsin.

Robert P. Nessler, 180 E. Delaware Place, Chicago, Illinois.

Edward B. Petersen, Black Point Road, Lake Geneva, Wis.

Andrew J. Roeder, R. F. D. 2, Waupun, Wisconsin.

Patricia Salchert, 9403 W. Center St., Milwaukee, Wis.

Dr. C. J. Schneider, 521 Wilcox Street, Waupun, Wisconsin

Mrs. Jack Slowey, 16 Walnut St., Somerville 43, Mass.

W. D. Stoltenow, Box 205, R. No. F, Tieton, Washington.

Edward S. Tallmadge, Pine Lake, Hartland, Wisconsin.

Lyal L. Tyrrell, 2815 Harmony Circle, Waukesha, Wis.

Peter Weiskopf, 4547 No. 30th St., Milwaukee, Wis.

Wayne Wiersum, R. 3, Box 196, Kenosha, Wisconsin.

Stephen W. Young, R. R. 3, Box 347, Antioch, Illinois.

December, 1959 Vol. 40, No. 4

THE WISCONSIN ARCHEOLOGIST

KANSAS CITY, MO.
PUBLIC LIBRARY

MAR 30 1960

ARCHEOLOGICAL STUDIES OF FOUR WISCONSIN ROCKSHELTERS ---------- 13
Warren L. Wittry

A PLEA FROM YOUR PRESIDENT ---------- 26
Phillip H. Wiegand

WISCONSIN ARCHEOLOGICAL SOCIETY

Milwaukee, Wisconsin

Incorporated, 1906

For the purpose of advancing the study and preservation of Wisconsin Indian Antiquities.

OFFICERS

PRESIDENT

P. H. Wiegand

VICE-PRESIDENTS

Laurence Kracht, Dr. D. A. Baerreis, Herman O. Zander, Paul Scholz, Lincoln Smith, Jr.

DIRECTORS

Dr. E. G. Bruder, Kermit Freckman

ADVISORY COUNCIL

Frank Achen, Zida C. Ivey, Arthur W. Quan, Carlos Cortez, Paul Koeppler, Dr. Chandler W. Rowe, William Curkeet, Jr., Mrs. Theo. Koerner, Chas. G. Schoewe, Edward Eichenberger, William Oestreich, Kirk Whaley, Dr. William Godfrey, Neil Ostberg, Dr. A. H. Whiteford, Robert L. Hall, Louis Pierron, Dr. Warren L. Wittry, Dr. Robert Howard, Allen Prill, Lincoln Smith, Sr., Dr. Stephan F. Borhegyi

TREASURER

Martin Greenwald, 4567-A N. 30th S., Milwaukee, Wis.

SECRETARY

Nona Wiegand, 1276 N. 63rd Ct., Wauwatosa 13, Wis.

EDITOR

Dr. Robert Ritzenthaler, Milwaukee Public Museum, Milwaukee 3, Wis.

MEMBERSHIP FEES

The Wisconsin Archeologist is distributed to members as part of their dues.

Life Members, $50.00 **Endowment Members, $500.00**
Sustaining Members, $5.00 **Annual Members, $2.00**
Institutional Members, $2.00

All communications in regard to the Wisconsin Archeological Society and contributions to the Wisconsin Archeologist should be addressed to Phil H. Wiegand, 1276 N. 63rd Ct., Wauwatosa 13, Wis. Entered as Second Class Matter at the Post Office at Lake Mills, Wisconsin under the Act of August 21, 1912. Office of Publication: 204 N. Main St., Lake Mills, Wis.

THE WISCONSIN ARCHEOLOGIST

New Series

Published Quarterly by The Wisconsin Archeological Society

MILWAUKEE, WISCONSIN, DECEMBER, 1959

ARCHEOLOGICAL STUDIES OF FOUR WISCONSIN ROCKSHELTERS

Warren L. Wittry

This publication is a modified version of the writer's Ph. D. dissertation ARCHEOLOGICAL STUDIES OF FIVE WISCONSIN ROCKSHELTERS, University of Wisconsin, 1958. Since the final report on the Raddatz Rockshelter, Sk5, has been published (Wittry 1959), Chapter V of the original work which analyzed the testing of that site is omitted here. The chapters, figures, table, and map following Chapter IV have been renumbered.

ABSTRACT

Archeologists working in the Wisconsin area have been somewhat handicapped by a lack of locally obtained chronological information. This situation has made it necessary to reconstruct the sequence of local cultures largely by comparisons with the sequences developed in adjacent areas from more abundant stratigraphic data and, more recently, from radiocarbon dating. One problem, in particular, which has received a degree of attention, but which has not been adequately resolved, is concerned with the cultural and chronological relationships between the Wisconsin Hopewellian and Effigy Mound cultures.

A search for stratified sites which would provide data bearing on prehistoric chronology in general and on the Hopewellian-Effigy Mound relationships in particular led to the rockshelters of the glacially Driftless Area of southeastern Wisconsin. Several of these natural shelters which were occupied by various prehistoric Indian groups were so situated as to have local geologic conditions favorable to the formation of a stratified deposit. Excavations were conducted in rockshelters located in the eastern part of the Driftless Area. The great majority of the artifacts found belong to the cultures of the Archaic and Middle Woodland periods. Since the cultural and natural stratigraphies of the sites were essentially undisturbed, the relative chronological positions were determined for a number of chipped-stone and ceramic artifact types.

The earliest occupations, as represented by the deepest materials, are closely related to the Old Copper culture, the best known Archaic culture of the Wisconsin area. The rockshelters probably represent occupational sites of this complex, previously known only through surface finds and the excavation of cemeteries.

The excavations established a stratigraphic sequence of Middle Woodland pottery types which clarifies the temporal relationship between Wisconsin Hopellian and Effigy Mound. **Denzer Stamped,** a pottery type also found in the Trempealeau

and Red Cedar River foci of Wisconsin Hopewellian, and which resembles Havana pottery of Illinois, was found stratigraphically earlier than **Madison Plain** and **Madison Cord Impressed,** two pottery types associated with the Effigy Mound culture. **Leland Cord-Marked,** the local equivalent of the Illinois Weaver ware was found to have a stratigraphic position later than Denzer Stamped and earlier than Madison ware. The data from the rockshelters, certain radiocarbon dates, and other recent information are briefly summarized as evidence for the local emergence of the Effigy Mound culture after classic Hopewellian had died out in the area. The temporal dividing line between the two is postulated at about 500 to 600 A. D. A survival of Effigy Mound from the Late Middle Woodland period into the Mississippi period is indicated. This interpretation places the Effigy Mound culture somewhat later in time than the interpretations existing at the time the study was initiated.

Since both Wisconsin Hopewellian and Effigy Mound have been defined primarily from excavations in burial mounds, the data obtained from the rockshelters can be utilized for a further understanding of these cultures.

The relative numbers of various artifact categories (scrapers, knives, etc.) in proportion to the number of projectile points in the various levels indicate that these rockshelters were utilized as primary habitation sites during the Archaic period and as auxiliary hunting stations by the partly food-producing cultures of the Middle Woodland period. Practically no remains of the Paleo-Indian, Early Woodland, and Mississippi culture periods were found in the sites investigated.

CONTENTS

	Page
Acknowledgements	142
I. Introduction	143
Wisconsin Archeology	
Purpose of Present Studies	
II. The Durst Rockshelter, Sk2	159
Location and Description	
Excavation Procedure and Stratigraphy	
Features	
Burials	
Cultural Remains	
Summary and Interpretation	
III. The Knoop Rockshelter, Sk3	223
Location and Description	
Excavation Procedure and Stratigraphy	
Cultural Remains	
Summary and Interpretation	
IV. The Zech Rockshelter, Sk4	233
Location and Description	
Excavation Procedure and Stratigraphy	
Cultural Remains	
Summary and Interpretation	
V. The Gov. Dodge State Park Rockshelter, Ia1	239
Location and Description	
Excavation Procedure and Stratigraphy	
Cultural Remains	
Summary and Interpretation	
VI. General Summary and Interpretations	248
Paleo-Indian	
Archaic	
Early Woodland	
Middle Woodland	
Wisconsin Hopewell-Effigy Mound Relationships	
Late Woodland and Mississippi	
Historic Period	
VII. Conclusions	263
Bibliography	264

INDEX TO NAMED TYPE DESCRIPTIONS

Page

Ceramic

Baraboo Cord-marked - - - - - - - 211

Baraboo Net-marked - - - - - - - - 213

Denzer - Stamped - - - - - - - - 209

Leland Cord-marked - - - - - - - - 207

Madison Cord Impressed - - - - - - - 202

Madison Plain - - - - - - - - - 200

Chipped Stone

Durst Stemmed - - - - - - - - - 179

Kolterman Indented Base - - - - - - - 185

Monona Stemmed - - - - - - - - 180

Raddatz Side-notched - - - - - - - - 178

ACKNOWLEDGEMENTS

The interest and cooperation of several institutions and individuals have aided the work reported in the following chapters. Financial contributions toward the expenses of fieldwork were made by the State Historical Society of Wisconsin, the Wisconsin Archaeological Survey, and the Wisconsin Academy of Sciences, Arts, and Letters. I am grateful for the diligent work of the field assistants. They are named in connection with the sites where they worked.

Special acknowledgement is extended to the owners of the sites where excavations were conducted, not only for their generous permission to dig, but for their active cooperation and many courtesies. That the sites have been named after them is only a partial recognition of their contribution to Wisconsin archeology. The excellent cookery of Mrs. Reuben Knoop, North Freedom, and Mrs. George Yanke, Denzer, added greatly to the successful operation of the fieldwork.

This dissertation was written under the supervision of Prof. David A. Baerreis whose understanding of the problems involved and suggestions have been of considerable help.

To these individuals and institutions and others who aided in the work, I am deeply grateful.

W. L. W.

ARCHEOLOGICAL STUDIES OF FOUR WISCONSIN ROCKSHELTERS

BY

WARREN LEE WITTRY

I. INTRODUCTION

Wisconsin Archeology

For obvious reasons, prehistoric Indians recognized no such boundaries as our modern state lines except, perhaps, where they happen to coincide with natural geographic barriers. Yet, there has been a strong tendency to organize archeological research by states which has resulted in the frequent usage of such terms as "Wisconsin archeology," "Illinois archeology," etc. Except for differences in degree of study, the terms are not meant to imply that on one side of a state line one kind of archeology is obtained and on the other side, another. The terms result primarily from the fact that the greater part of archeological fieldwork has been carried on by tax-supported state institutions — universities, museums, historical and archeological societies — which may limit fieldwork activities to the area from which their support is drawn. There has been a similar tendency on the part of municipal and private institutions to work within the boundaries of one state.

"Wisconsin archeology" thus refers to the study of prehistory in the area that is the present state of Wisconsin. This area contains no less than 5 major geographic provinces, at least a similar number of native vegetation types, 4 major soil types, and also can be divided by drainage, rainfall, mean temperatures, and a variety of other ways. On the positive side, it seems apparent, from what is now known, that the Wisconsin area was at times an important center of local culture development. The Old Copper culture centered in eastern Wisconsin as a specialized variant of the Archaic cultures of the Midwest. The Effigy Mound culture was almost totally contained within the area. The terms Wisconsin area and Wisconsin archeology can be used to serve a certain practical purpose even though they are not fully valid from a strictly scientific point of view, and if the idea that Wis-

consin archeology is "but one chapter in a connected story" (McKern 1927, 1939a) is also borne in mind.

It is not intended here to go into the details of what is now known about the prehistory of this area. This information is contained primarily in the publications of the Milwaukee Public Museum and the Wisconsin Archeological Society. General summaries, to be discussed below, appear in a wider variety of sources. The intention here is to point out the objectives of archeological research in a given region and to measure, insofar as it can be done on a generalized level, the progress which has been made toward attaining these goals in the Wisconsin area. Such an analysis, even if somewhat superficial, would tend to bring to light the major gaps in our knowledge, as well as the areas where positive contributions have been made, and would aid in orienting future research.

The objectives of Wisconsin archeology have been (1) to discover which prehistoric cultures (i. e., foci, phases, etc.) occupied the area; (2) to determine their cultural, spatial, and temporal relationships; (3) to understand the nature of each culture as far as it can be reconstructed from archeological data; (4) to study primitive man's relationship with nature through his culture, and finally, as implied above, to see how prehistoric developments in Wisconsin fit in with those of the Midwestern region and of North America as a whole.

Archeological studies in the area began in 1836. That year marked the arrival of Increase A. Lapham at Milwaukee and the first printed description of an effigy mound — an account by Lapham in the **Milwaukee Advertizer** of a large turtle mound located in Waukesha. In the same year Timothy Johnson discovered the great site that Judge N. F. Hyer named "Aztalan" in his descriptions published the following year.

During the half-century after Lapham's arrival, interest was focused on the effigy mounds and Aztalan; both figured prominently in his "Antiquities of Wisconsin" (1855). Because of these antiquities, Wisconsin became known throughout the scientific world. The work of locating and describing mounds was carried out by many individuals. Whether or not their conclusions concerning the authorship of the mounds are now considered true or false, we must be grateful to them for des-

cribing, at least, external characteristics of earthworks that are now destroyed. Toward the end of this period the heavy utilitarian copper implements whose center of distribution lay in Wisconsin also came under discussion.

In the 1880's the first archeological fieldwork under institutional sponsorship was done. Cyrus Thomas and his assistants, representing the Bureau of Ethnology, excavated mounds in the eastern and western parts of the state. Collections of artifacts were being brought together, primarily by individuals, but also by the State Historical Society, the German-English Academy of Milwaukee, and the Wisconsin Natural History Society (the latter collections formed the nucleus of the Milwaukee Public Museum). In 1901 the archeological section of the Wisconsin Natural History Society began the publication of **The Wisconsin Archeologist.** Within two years the section broke away and formed the Wisconsin Archeological Society which has continued the publication of this important archive of the state's archeology. For forty years its editor was Charles E. Brown whose contributions to Wisconsin archeology are many and varied, but foremost was his accumulation and publication of descriptive information on artifacts and sites, an accomplishment aided by his wide knowledge of the state and his friendship with archeologically minded citizens — many of whom he had originally stimulated to such pursuits. Although he had some special interests such as typology and distributions, Brown used the "shotgun" approach in collecting data. He was interested in getting it all down on paper and frequently lamented the fact that information from northern counties was slow in coming in. In 1911, the Wisconsin Archeological Society received a state appropriation of $1500 for the purpose of conducting archeological surveys and researches. The results of this work were subsequently published in the Society's quarterly.

Fieldwork sponsored by the Milwaukee Public Museum began in 1917 with S. A. Barrett at the Kratz Creek mound group. Barrett's great work at Aztalan and his monumental **Ancient Aztalan** have assured him a place in the hall of fame of Wisconsin archeologists.

The turning point, the beginning of the study of Wisconsin archeology as it is being pursued today, came about through the work of W. C. McKern who came to the Milwaukee Public Museum in 1925. Within months he was in the field on the first of several major expeditions. Unlike the Bureau of Ethnology's mound - exploring division's plans for fieldwork which included "a careful examination and study of the archeologic remains in the United States east of the Rocky Mountains," and the similar over-all collecting approach of Brown, McKern stated as field objectives:

> "The Department of Anthropology of the Public Museum of Milwaukee, under the advice of the Director, Dr. S. A. Barrett, and with his active cooperation, has planned a definite program for its archeological investigations in Wisconsin. This has seemed advisable in order that a maximum of scientific results might be obtained with a minimum cost and expenditure of time. The program is chiefly concerned with Indian mounds, since the principal archeological problems in this district look to mound investigations for solution.
>
> "It is planned primarily to confine work, for the most part, to an area which would appear on the map as a band extending through central Wisconsin from east to west. Each field season is to be devoted to a new site, or sites, within this limited area until a mass of data shall have accumulated from a linear series of sites extending entirely across the state. The east-west direction has been selected because of the fact that the vast majority of the water courses and drainage basins extend in the opposite direction, north and south, a condition which would lead one to expect that the natural routes of trade and migration would also extend north and south. A greater cultural variety, therefore, is to be expected in working east and west than in other directions. A knowledge of the variety in ancient culture to be encountered in state wide investigations would tend greatly to facilitate intelligent research in Wisconsin wherever undertaken" (McKern 1928:225).

That McKern's plans were more or less carried out in the area projected in the above statement would be evidenced by a map showing the locations of sites excavated under his direction. It is also true that his fieldwork was "chiefly concerned with Indian mounds." Three of his four major mono-

graphs reporting fieldwork are devoted to mound excavations (1928, 1930, 1931). Excavations by McKern at the Raisbeck mound group in southwestern Wisconsin have been reported by Rowe (1956). The fourth monograph does deal primarily with habitation sites (McKern 1945), but they are confined to that "band extending through central Wisconsin from east to west." Work at the Polander group in Crawford County and other mound excavations along the Mississippi River have been briefly described (McKern 1931b). The last of McKern's major explorations, of the Clam River focus and Red Cedar River focus mounds in the northwestern part of the state, also have been briefly summarized by him (1935, 1936, 1942) but not yet reported in detail.

Although his fieldwork and writings will always occupy a very prominent position in Wisconsin archeology, McKern will be known more widely for his Midwestern Taxonomic Method (1939). This method, initially proposed in 1932, represents the first attempt to synthesize the archeology of the region. Some seeds for the development of the system might be present in Shetrone's table of relative occurrence of type artifacts at Hopewell sites in Ohio (1926:224) and McKern's comparative trait lists (1931:232-240). At first, the method served as a means of orienting discussions at conferences. It was further developed and refined through a series of unpublished mimeographed reports and further discussions (Griffin 1943: Appendix A, summarizes this history).

Wisconsin archeology in general was first discussed in print in terms of the method by Deuel in 1935. The Woodland and Mississippi basic cultures (now called patterns) were defined The definitions followed McKern's earlier (1928, 1931a) separation of the "Woodland pottery culture" (Lake Michigan Ware in Wisconsin) and the Upper Mississippi; and Barrett's (1933) distinction between Lake Michigan and Woodland pottery, on the one hand, and Middle Mississippi pottery, on the other.

The system was applied to the classificatory position of the Aztalan site by Barrett in 1933 and to Wisconsin Hopewell by Cooper in the same year.

In 1940, a rather important summary of Midwestern arche-

ology appeared (Setzler, 1940). In it, all of the major culture divisions then recognized in Wisconsin were discussed and for the first time placed in a relative chronological outline. Seltzer's outline was pieced together from various sources, notably the stratigraphic sequence for central Illinois (Cole and Deuel, 1937). It is worth pointing out that of the 5 major prehistoric "cultures" (the reader will bear in mind that we are discussing Wisconsin archeology on a very generalized level): Archaic, Hopewell, Woodland including Effigy Mound, Middle Mississippi, and Upper Mississippi, known for Wisconsin at the present time, only one, the Archaic, was not discussed by Setzler. McKern first theorized about the prepottery placement of Old Copper implements the preceding year (1939a) and Setzler does conjecture Archaic complexes for areas south of the northern Mississippi Valley.

To the student of Wisconsin archeology, as well as those elsewhere in the Eastern United States, the next important synthesis was compiled by Ford and Willey in 1941. It presented a new framework, that of culture stages, for the prehistory of the Eastern United States. The Wisconsin area is by-passed in their chronological profiles, but the general stage sequence, applicable primarily to the southern and central parts of the East provided a generalized matrix with which the local materials could be compared and correlated.

The geographical gap in Ford and Willey's paper is partially filled by Cole (1943) who did not follow the Ford and Willey scheme and who did not see McKern's important 1942 article in time to incorporate it, but there can be no doubt that Cole had a fairly good idea of Wisconsin materials from McKern's publications and discussions with him. The chronological chart accompanying Cole's paper includes a prepottery horizon.

McKern's article, "The First Settlers of Wisconsin," published in 1942, is important in several respects. It is the only general summary of Wisconsin archeology ever set forth by one who had extensive field experience in the area. For the first time, all of the known prehistoric cultures of the area are classified under the Midwestern Taxonomic Method. However, chronological data available in Wisconsin at that time

was very limited. The only excavated sites where culture stratigraphy was present were the White Camp site II (McKern 1931:240 — more fully described in 1945:164-168) and the Cooper rockshelter (Cooper 1933:85) which has not been analyzed as yet. Because of the lack of stratified sites, the relative ages of the Wisconsin cultures were based, in large part, upon comparisons with materials outstide the area, the relative ages of which had been fixed by more complete stratigraphic sequences. There was simply a dearth of locally obtained chronological information.

The summaries following McKern's 1942 paper are all based upon it and, of course, the basic data that lay behind it. Significantly, the later summaries were all produced by archeologists whose major interests lay in other areas and who did not have intimate knowledge of Wisconsin materials except as they had been reported by McKern, Barrett, and others, in publications. The Milwaukee Public Museum, however, has always made available unpublished data to interested students with the result that the more pertinent literature is frequently footnoted with "W. C. McKern, personal communication." Nevertheless, it has been primarily the printed word upon which the other workers have relied. The written statement, no matter how carefully phrased or qualified, somehow seems to take on a more definite meaning to the reader than was intended by the writer (c. f., Griffin 1943:333). Due to this tendency, the later summaries have presented Wisconsin archeology in a rather simple, uncomplicated fashion. Because the summaries do not permit a detailed discussion of the facts, especially those facts which might counter the interpretation being given, an idea originally set forth as a suggestion or hypothesis frequently is transcribed in a synthetic review as a near-fact or fact, and, sometimes erroneously.

Since 1942, important summaries including the Wisconsin area have been written by Griffin (1946), Martin, Quimby and Collier (1947), and Bennett (1952). The only new Wisconsin data incorporated in the latter two, came from the Osceola Old Copper cemetery (Ritzenthaler, 1946). All were written prior to the advent of radiocarbon dating.

Briefly, these summaries have placed the Wisconsin cultures where they seemed to fit best in the culture period sequence developed for the Eastern United States (Griffin, 1952). It had been determined locally that the Mississippi cultures followed the Woodland and Hopewellian cultures, that some Woodland and Mississippi cultures survived into protohistoric and historic times, and it was suggested that the Old Copper implements antedated all of these. Other than this, the relative age of Wisconsin cultures seems to have been mainly interpreted from the degree of skeletal preservation (McKern 1931:241, 1945:168).

Following World War II, there has been an increase in archeological fieldwork in Wisconsin and in the Eastern United States in general. Since 1947, most of the scientific fieldwork in the state has been under the auspices of the Wisconsin Archeological Survey (Baerreis 1948). Much of it has been of an emergency, salvage nature which the directors of the Survey have wisely chosen as the best way to utilize its modest financial resources.

Despite this additional fieldwork and new developments such as radiocarbon dating, Wisconsin archeology stands today largely as it was reconstructed by McKern in 1942. The additional work has effected some refinements of the prehistoric picture, but they tend to supplement rather than contradict McKern's work.

At this writing (May, 1958), seven radiocarbon dates have been determined on Wisconsin Indian remains. * At least six samples from four sites are at laboratories awaiting processing. Although this seems to be the best method of dating available, its high cost prevents very extensive usage. Furthermore, datable samples are not always obtained from excavated sites. In the past, Wisconsin archeology has suffered from a dearth of locally obtained chronological data. This lack is but one of the many problems in Wisconsin archeology, all worthy of immediate attention, which could be defined by the interested student. A serious situation, briefly mentioned above, is concerned with the rapid destruction of antiquities.

* In November, 1959, as this goes to press, the total is 13.

Until the turn of the century, agricultural activities were the principle destructive agents. Although the damage caused by the plow has continued, various types of construction, at an ever increasing rate, have become even more serious threats to the remaining sites. The expansion of cities, the building of roads and dams, and the mining of gravel deposits are a few of the worst destroyers.

Unfortunately, not every threatened site or instance where remains are encountered during construction work is brought to the attention of archeologists. Even of those sites reported, only a fraction can be properly attended to because of the small number of archeologists available for such work and the meager funds at hand. Logically, the basis of selecting threatened sites for investigation must rest with the nature of the information potentially contained in the site and the usefulness these data might have in completing the picture of the prehistoric past. Painful as it is, we must face the fact that certain segments of the archeological record have already been destroyed without scientific recording, and that as each day of the push-button era passes, more and more remains are being destroyed. Present day archeologists have, as one of their foremost obligations, the responsibility of salvaging as much of this information as possible before it is lost forever.

In terms of research problems — areas of investigation which are specifically oriented toward the objectives of Wisconsin archeology as stated above — a few of the more serious gaps should be pointed out. First of all, the geographical distribution of both surface survey work and subsurface investigations is very spotty. A recent map showing the locations of excavated sites reveals that only the east-central and extreme western portions of the state have received a degree of attion, while the remaining parts are virtually untouched (Wittry 1957:67). It is interesting to note that when this map, showing the locations of excavated sites, is compared to one showing the distributions of known cultures (Ritzenthaler 1953:42), the areas of the latter map are confined closely about the excavated sites. The surface distribution of diagnostic culture traits, however, can be used as a more accurate method of determining areas of cultures. This has been done

for Old Copper (Wittry 1951) and for Effigy Mound (Charles E. Brown, unpublished MSS., State Historical Society; Rowe 1956:11).

An analysis of the types of sites excavated would also show an unbalanced picture. Although difficult to tabulate accurately, it is readily apparent to anyone familiar with Wisconsin archeology that fieldwork has been conducted mostly at burial, rather than habitation, sites. Aztalan and the Oneota villages represent major exceptions, but it must be conceded that Wisconsin's Archaic and Woodland cultures are only incompletely understood because of the small amount of work reported from inhabited sites dating from these periods.

One problem, in particular, which has received a degree of attention but which has never been adequately resolved is concerned with the cultural and chronological relationships between the Hopewell and Effigy Mound cultures in the Wisconsin area. For some time, both have been placed in the Middle Woodland period but a great deal of confusion has permeated the literature in regard to whether the Effigy Mound culture was in existence when Hopewell arrived in Wisconsin and, if so, what were the nature of contacts, if any? Or, whether the Effigy Mound culture developed after Hopewell arrived and, if so, did Hopewell play any part in influencing this development?

In 1942, McKern recognized three Wisconsin Hopewell foci: Trempealeau (McKern 1931), Red Cedar River (Cooper 1933), and Waukesha (Wood 1936). Their areas, in order, were along the Mississippi River from Crawford to Trempealeau Counties, Barron County, and Waukesha County. The Effigy Mound aspect was divided into three foci: Buffalo Lake (McKern 1928), Horicon (McKern 1930) and Grant (name changed to Beetown in McKern's 1945 chart, reported by Rowe 1956); distributed in Marquette, Dodge and Sheboygan, and Grant Counties, respectively. The Effigy Mound culture (i. e., aspect) was considered as being an entirely local development (McKern 1942:164), unlike the Hopewell culture which represented an intrusion of a "foreign" cultural complex (McKern 1931:234). The relative ages of these two cultures were interpreted mainly from the degree of decay exhib-

ited by the skeletal remains, with Hopewell being considered the older (McKern 1931:240, 241).

When the Red Cedar River focus of Hopewell was described by Cooper, it was also placed at a relatively earlier time along with the Trempealeau focus (1933:85).

Setzler's conclusion in 1940 (p. 265) was that the Hopewell culture had actually become extinct before the establishment of the Lake Michigan phase (including the Effigy Mound aspect) in the northern Mississippi Valley. This interpretation, however, was reversed by Cole (1943:300, 301) who saw sufficient resemblances between the Central Basin phase of Illinois and the Lake Michigan phase in Wisconsin to equate them on the same temporal level. These phases were thought to have been in existence at a time when the Hopewellian culture had already developed most of its essential features in areas to the south and southeast. When Hopewellian elements were either carried or diffused to Illinois and Wisconsin, they merged with Central Basin to produce "classical" Illinois Hopewell and with Lake Michigan to produce Wisconsin Hopewell. It is clear from Cole's paper, and the chart accompanying it, that he not only interpreted Effigy Mound as antecedent to Wisconsin Hopewell, but that it was even partly ancestral to it. Subsequent statements have followed the pattern set by Cole.

Griffin's views, in 1946, placed Effigy Mound as beginning before Hopewell in the area and persisting with the latter for some time. The earliest Effigy Mound, consisting of mound groups which are dominantly conical but including a few linear mounds, is called "Proto-Effigy Mound," (c. f., McKern 1942: 164) and is shown on the maps as occupying the same area as the Effigy Mound culture proper (Griffin 1946:58, 68, 69, Figs. 1, 4, 5).

Martin Quimby, and Collier (1947), in assigning dates of A. D. 700-1300 to the Effigy Mound culture and A. D. 900-1300 to the Wisconsin Hopewell culture, also allow for the temporal priority of Effigy Mound over Hopewell. The dates are pre-radiocarbon method guesses and are restated here only to show their interpretations on relative age. These authors also subscribe to the Proto-Effigy Mound theory and state

(p. 305) "The early Effigy Mound Indians may have built only linear and conical mounds, and those in the form of effigies belonging to a slightly later period of Effigy Mound culture."

Essentially the same ideas were set forth by Bennett (1952) in the following: "This [Effigy Mound aspect] complex is generally of Middle Woodland status in mounds, burial practices, pottery, and implements, but it stands as a distinct manifestation. It appears as one of the Middle Woodland cultures in Wisconsin with suggestive Early Woodland antecedents, but persists throughout the period in which Hopewellian developments were present, and its echoes, in pottery at least, persisted into historic times with the Menominee and other tribes (p. 114). In general, the Trempealeau Focus displays a rather simple mound and burial complex, analagous to some Middle Woodland developments in Minnesota and probably related also to Effigy Mound. Pottery is more Middle Woodland than Hopewellian of the finer variety, but stone artifacts are abundant and Hopewellian in type" (p. 116).

The most recent published data on the Effigy Mound culture in general concludes: "It can be stated with reasonable certainty that the Effigy Mound culture itself has considerable antiquity. The earlier manifestations, at least, seem to equate in time with early Wisconsin Woodland and Hopewell, the oldest mound-building culture in the state" (Rowe 1956:91). The evidence for this statement is of a general character, based primarily upon similarities in mound-building and burial customs (pp. 78, 79). Because earlier reports, summarized by Rowe, did not present sufficient descriptive detail about the artifacts found as intentional mound inclusions, or as accidental inclusions in the mound material, he was restricted in the matter of making more detailed comparisons of artifact traits. Furthermore, the quantity of artifact remains which could be definitely classed as Effigy Mound was so limited that the establishment of precise typological categories was impaired.

It might be seriously questioned whether such ceramic decorative techniques as embossed nodes, punctating, and rock-dendate, listed by Rowe (p. 89) as occurring in Effigy Mound, as

well as Hopewell, are actually Effigy Mound traits. So far as is definitely known, these traits are not present on any pottery intentionally placed in mounds of the Effigy Mound culture. Punctates are present on some Effigy Mound pottery, as it is defined below, but they generally were made with a knotted or looped cord and never produced a raised node on the vessel's interior surface. The sherds shown in Rowe's Fig. 32 may well represent an assortment of greater cultural and temporal variety than that possessed by the Effigy Mound potters.

In focusing attention on the problem of cultural and chronological relationships between the Wisconsin Hopewell and Effigy Mound cultures, it should be noted that certain gaps in our knowledge are largely responsible for this situation. First, both of these cultures are known almost exclusively from the excavation of burial mounds, although very recently some Effigy Mound village sites have been reported. Second, because of inadequate data and the lack of detailed artifact descriptions, it has been difficult to construct precise artifact typologies for these cultures which would be useful in resolving the problems. Third, the lack of locally obtained direct chronological information bearing on the two cultures, as well as Wisconsin archeology in general, has been a major obstacle to proper understanding of prehistoric cultural developments in the area.

Purpose of Present Studies

Having emphasized the need for both salvage and research archeology in Wisconsin, and the fact that both should be carried on with judicious use of the limited resources, it seems appropriate at this point to place the researches that follow in their proper perspective. It is impossible, of course, to orient fieldwork toward one simple (or complex) problem. Proper excavations are designed to recover all of the significant materials and information contained in the soil. The results generally pertain to several lines of archeological study and may produce data of cultural, chronological, and geographical importance. It was hoped to locate in the area a number of stratified occupational sites which would provide evidence

that would be helpful in filling the gaps noted above. Excavations and analyses of materials found at such sites would appear to be the best solution of the problems as outlined. But stratified sites are rare in the Midwestern region and few have been reported. Nevertheless, an intensive search was ininitiated in 1953.

The search for stratified sites would lead to those geographic areas of the state where there would be geologic conditions favorable to their formation. The conditions are simple, calling only for intermittent or more or less continuous occupation of the site and local geologic conditions under which there would be more or less continuous soil deposition at the site, thereby causing the various occupation surfaces to be under the constant process of burial.

The glacially Driftless Area of southwestern Wisconsin offered the most fruitful possibilities for investigation. This area covers approximately 15,000 square miles. Before the coming of the Whites, about one-third of it was in prairie or oak-openings with the remainder hilly and forested. The topography of this region has been largely determined by the drainage pattern which was partly controlled by the basic geological features. The rocks include Paleozoic sandstones and limestones in layers which dip slightly to the south. In addition, weathering and wind erosion have continued since long before the Pleistocene and it is the work of these agencies which has produced the more extreme topographic features such as precipitous bluffs, crags, pinnacles, natural bridges, and rock overhangs. Such features are absent from the eastern, glaciated part of the state, but were probably present prior to the Glacial Period.

The rock overhangs which were used by primitive man as natural shelters are termed **rockshelters.** In the Driftless Area, they occur both in the limestone and sandstone belts and in areas where the two rocks are found together — where the weaker sandstone has weathered back more rapidly than the overlying limestone. Generally, the sandstone shelters provide the best conditions for the accumulation of a floor deposit, the materials being basically derived from the walls and ceiling of the shelter by continuous weathering and erosion. The de-

posits may become stratified as a result of changes in the natural conditions under which the deposit is laid down, or by the activities of human occupants including the building of fires and refuse disposal resulting in observable vertical (and horizontal) changes in the physical make-up of the deposit.

A good deal of the writer's spare time during 1953 and 1954 was spent in search of rockshelter sites. The records of the Wisconsin Archeological Society and the Charles E. Brown papers in the State Historical Society MSS Department were searched for location records. Except for those shelters which bore petroglyphs on their walls, few leads were encountered.

Most leads were obtained from farmers and hunters of the area, or were found by direct site survey.

The sites were selected for investigation primarily on the basis of having signs of primitive occupation and deposits deep enough to provide stratigraphy of one sort or another. On the surveys, depth was tested by the use of a long steel rod. Although rockshelters are found over most of the Driftless Area, except, perhaps, in the far northeastern part, those investigated are located on the eastern edge within 50 miles of Madison. The resources at hand, both for the preliminary surveys (which included areas as far as 100 miles from Madison) and the subsequent excavations, were limited. Proximity to Madison, therefore, did affect the selection of sites. The sites are located in Sauk and Iowa Counties where there had been virtually no previous scientific excavations. Site survey reports have been published for Sauk County (Cole 1922, Stout 1906) and the Cooper Rockshelter, Sk1, had been excavated in the early 1930's (Cooper 1933:85), but is not yet reported on. In Iowa County there has been practically no subsurface work. Fortunately, there has not been prevalent in the area of the rockshelters any legends of "buried treasure" with the result that the floor deposits are more or less undisturbed as far as the stratigraphic records are concerned.

The artifacts from the sites and the field notes, maps, photographs, and other records pertaining to them are permanently preserved in the State Historical Society Museum. The data derived from each site are summarized and interpreted at the close of the chapter dealing with it. In the final chapter, the

general conclusions and overall cultural and chronological significance of these data are reviewed.

Thus, the results of the excavations reported in the following chapters should prove useful in further definitions of the Archaic and Middle Woodland cultures of the Wisconsin area. Since the artifacts were found in stratigraphic relationships, some new data concerning area chronology can be set forth; in particular, the rather perplexing problem of relationships between Hopewell and Effigy Mound can be further explored. Finally, it appears that rockshelters can be considered as a distinct type of habitation site, and that they were utilized in different degrees during the succeeding culture periods.

II. THE DURST ROCKSHELTER, Sk2

Location and Description

The Town of Honey Creek in Sauk County is drained by the North and East Branches of Honey Creek, one of the two streams which flow through the southeastern part of Sauk County into the Wisconsin River. The predominant rock in this area is the Cambrian sandstone, although a few of the higher hills are capped with the Lower Magnesian limestone. Part of the South Range of Baraboo quartzite cuts across the northern boundary of the Town of Honey Creek.

Exposures of bare rock are common in the hills surrounding the relatively flat bottomed valleys of Honey Creek for the Cambrian sandstone is easily eroded. In color it is white to yellow, sometimes weathering to a dull gray. The upper levels of this formation are more calcareous and somewhat more resistant to weathering than the lower portions. The overhang of the Durst rockshelter is formed by one of these calcareous layers, the shelter itself being eroded out of a less firmly cemented layer.

This site was brought to the writer's attention in 1953 by Robert W. Nero. It is located in the NE ¼, SE ¼, Sec. 12, TION, R4E in the Town of Honey Creek, Sauk County. At the time of excavation, the land was owned by Louis L. Durst.

The site (Figs. 1 and 2) faces approximately to the southeast. The maximum amount of overhang is a little over 20 feet but due to the slope of the rear wall, the back portions of the shelter are not suitable for occupation except in a crouching position. The overhang extends for some 80 feet along the bluff wall, about 50 feet of this distance affording comfortable shelter. That this site was indeed a good shelter was brought to our attention when we were able to continue excavations without discomfort during several heavy rainstorms. The surface of the deposit underneath the overhang was fairly level at the southeastern end. From the midline northeastward the surface sloped upward until, at the far end, the elevation was 2 feet above that of the area excavated (Map 1). In front of the overhang the surface sloped off at a fairly uniform rate of about 25°.

When first visited by the writer, in the spring of 1954, the site showed no signs of recent disturbance of the deposit.

Fig. 1. The Durst Rockshelter, Sk2. Photo courtesy George Bloedau.

Fig. 2. The Durst Rockshelter, Sk2. Photo courtesy George Bloedau.

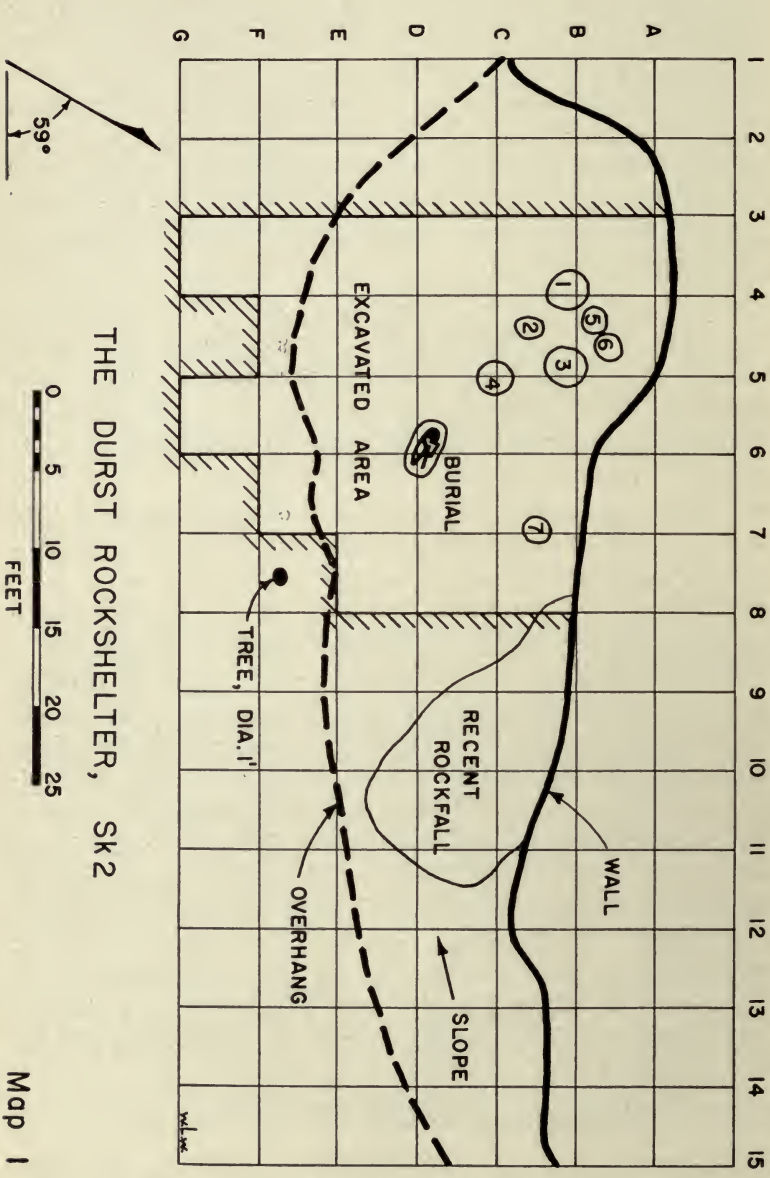
This proved to be true during the subsequent excavations, at least in the area investigated. There were signs of fires on the surface, as well as a number of names, initials and dates rubbed in the soft rock of the wall, all obviously due to the activities of recent hunters and picnicers. Markings which might have been made by prehistoric Indians were diligently searched for, but none were found. One 80-year date was barely discernable and presented a degree of weathering equal to that of any other area on the wall. It is probable that if pre-historic petroglyphs were once present, they had long since completely eroded away.

During the visit several sherds and a small projectile point were picked up on the surface. George Bloedau, who owns the farm immediately to the south, showed us several sherds he had picked up at the site. Cord-impressed and dentate-stamped designs were present on some of them.

A short time after the visit, an examination of the State Historical Society's anthropology collections brought to light a surface collection made at a village site located on the level land just in front of the shelter and adjacent to one of the forks of the North Branch of Honey Creek. The village site is about 300 yards from the rockshelter, in the SW ¼, SW ¼, Sec. 7, T1ON, R5E. The collection was acquired in 1932 from Emil Bloedau, father of George. Except for an eagle effigy, made from a sheet of native copper (Brown 1932), the collection is composed of chipped- and ground-stone implements. No pottery was included and only a few of the specimens were broken. It is, therefore, a "selected" sample from the village site. However, the total of over 400 specimens included a diversity of projectile point forms. If the village site surface collection were any indication of what might be present in the deposit of the adjacent rockshelter, perhaps in stratified relationships, the shelter would, indeed, be a promising site for investigation.

Excavation Procedure and Stratigraphy

Four weeks in August, 1954, and 2 weeks in August, 1955, were spent at this site. Robert W. Nero, Robert L. Hall and James W. Porter, respectively, assisted the writer for 2-week



THE DURST ROCKSHELTER, Sk2

Map 1

periods. During both sessions, camp was set up on the crest of a small ridge about 100 yards east of the site. We are grateful to Mr. and Mrs. George Bloedau for permitting us to camp in their pasture, for providing temporary fencing to protect the camp from cattle, and for allowing us to drive through their farmstead and fields on our way to meals.

A total surface area of 600 square feet was excavated to bedrock (Map 1). This area contained approximately 1800 cubic feet of deposit, an amount which is believed to be well over half of the important part of the site.

The horizontal control was a grid of 5-foot squares, one axis of which was more or less parallel to the long axis of the shelter. Individual squares were identified by the grid coordinates — a letter for one axis and a number for the other — of the eastern corner. Squares were excavated in arbitrary 4-inch levels, each parallel to the surface, except where the presence of features or natural stratigraphic conditions caused a modification of this procedure. Levels were numbered consecutively from the top down. The deposit of each level was loosened with a trowel and shoveled directly into a ¼-inch mesh screen placed over a wheelbarrow. The sandy earth was shaken through. The materials left in the screen were then

Fig. 3. Excavation Procedure, Durst Rockshelter, Sk2.

carefully "picked" and all cultural materials and animal bone refuse saved and bagged separately for each level (Fig. 3). Thus, a bag marked "Sk2/D6-3" would indicate that its contents were collected at this site, Square D6, Level 3 (depth 8"-12"). The waste dirt was wheeled off to the southwest, outside the site, and dumped. When a large enough area had been cleaned out, the wheelbarrow and screen were brought down onto the bedrock floor and the waste dirt was used to backfill the excavation. At the close of both sessions the profiles were banked up with waste dirt in order to preserve them.

Vertifical measurement was made primarily from the surface of the deposit. As a supplement to this, however, a datum point was established by the placement of a large metal screw eye in the trunk of the elm tree in the center of Square F8, 3 feet above ground level. The surface elevation of each stake was recorded relative to this point. As excavation progressed, all NW-SE, and some SW-NE, profiles were photographed and sketched.

In thickness, the deposit varied from 2 feet near the rear wall to 3 feet at points directly underneath the edge of the overhang. Since the surface of the deposit was essentially level over this area, the difference in depth from the rear to the front was accounted for by the slope in this direction of the rock floor. Both the surface of the deposit and the rock floor sloped off rapidly outside the overhang. The slope of the rock floor was greater than that of the surface of the deposit so the deposit increased in thickness as it extended to the southeast. At the "G" line of the grid the deposit was 5 feet thick.

In a deposit of this nature, that is one which has been built up by accretion over a relatively long period of time, disturbance of the natural stratigraphy can be caused by several factors. Though there was no vegetation except lichens and mosses in the area underneath the overhang, the roots of trees which grew outside the area did extend into it. Their growing, dying, and disintegration in the past could have caused minor disturbances. Displacement of materials by rodent activity was accounted for, where noticed, by keeping the materials found in burrows separate from the rest of the dis-

coveries. On the whole, there were very few signs of rodent activity: only a few burrows were found and of the two bushels of animal bones recovered, less than a handful were gnawed. Probably the most serious disturbance is that caused by human habitation. In addition to the displacement of the surface materials resulting from the movement of people in a confined area, the digging of pits for fire, storage and burial tend to exert disruptive influences on the stratigraphy of the deposit. Materials found in features, described below, were also kept separately. Despite such forces, the cultural and natural stratigraphies of the deposit in this shelter were fairly well preserved.

The natural stratigraphy was well defined and could be traced over the entire excavated area in the shelter proper. Outside the overhang, the stratigraphy, although analagous to that inside, was less distinct. Although both the absolute and relative thicknesses of the various strata varied slightly from one area to another, the C7-D7 and Row 7 profiles (Figs. 4 - 5) can be taken as typical for the area underneath the overhang. At the top of the deposit, A (the strata letters used here do not correspond to the horizon letters used in the designation of a "normal" soil profile), was a layer of loose, dry sand, usually about 4" thick and which would correspond to Level 1 of the various squares. This layer contained small bits of pottery, flint flakes, small projectile points, small fragments of bone, quantities of cow manure (of recent origin), small sticks, leaves and other vegetable remains brought in by animals and wind action. Below that was a layer of moist, slightly compacted sand, B, from about 1 foot thick, at the rear of the shelter, to about 2 feet thick, at the front. The color of this layer was brown at the top and gray to gray-brown at the bottom. There was no distinct separation of the colors on the profiles and in most areas there was a gradual transition from the top to the bottom of the layer. Larger pieces of pottery, animal bones and other types of occupational refuse were found in the B layer. The upper portions contained a considerable proportion of ash. However, no distinct fireplaces were found in this layer nor anywhere else in the deposit. Numerous angular quartzite fragments appeared in this layer, espec-

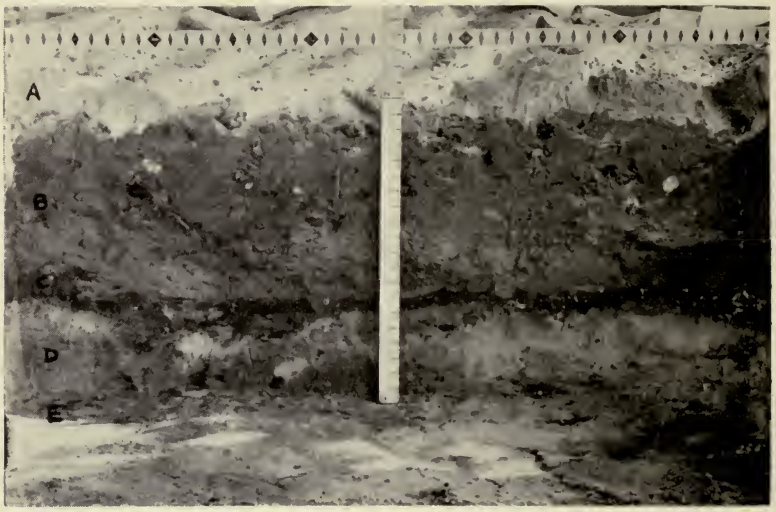


Fig. 4. CD-D7 Profile, Durst Rockshelter, Sk2.

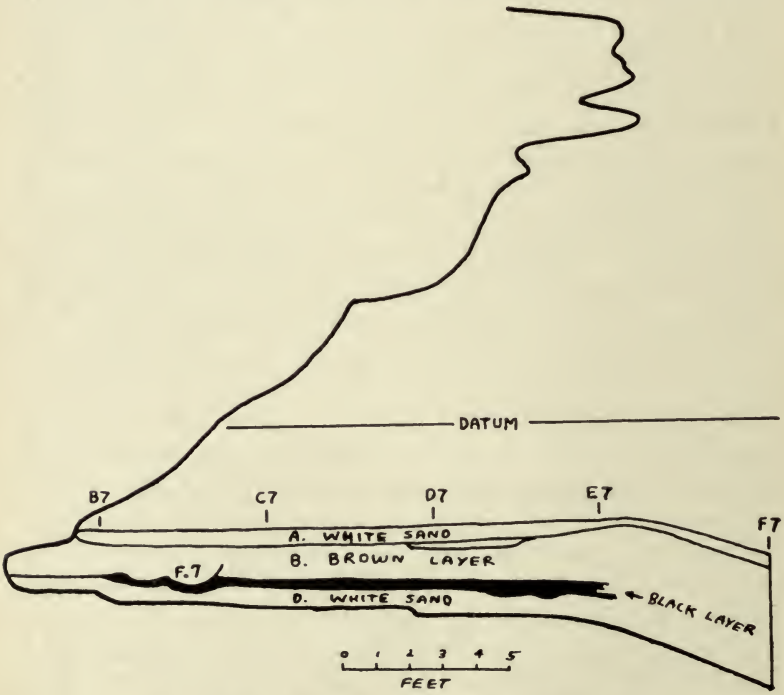


Fig. 5. Row 7 Profile, Durst Rockshelter, Sk2.

ially in the lower half. None were worked and it is probable that they were used in stone boiling. An outcrop of the same material, about 220 yeards east of the site, is undoubtedly the source.

The third stratum, C, 1.5 feet deep near the rear wall and 2.5 feet deep farther out, 2 to 3 inches in thickness, was very definitely defined and had a distinct physical and color separation from the earth above and below it. It was very dense, black in color, and partly cemented. The few potsherds found in it were leached; the bone material was poorly preserved, except those pieces that were charred or calcined. The flint artifacts, although possibly a little more leached than those of the upper layers, were in good condition. The D layer lay below the Black (C) layer. It consisted of damp, loose, white to gray sand. At first it was thought to be sterile of cultural materials, but a few stone artifacts, and an occasional bone did appear. Bedrock is shown at E in Figure 4.

Going from inside the shelter to the outside, there was a gradual change in each of the 4 strata described above. The presence of vegetation on top of the A layer caused it to become a dark humus layer. Below that, the B layer appeared on the profiles a dark gray at the top and a lighter gray at the bottom. The Black layer faded out, appearing to merge with both the soil above and below. The D layer of light sand continued outward, but became increasingly cemented the farther out and the closer to bedrock it occurred. It could only be excavated with difficulty near bedrock in the vicinity of the G3-G4 and G5-G6 profiles. These two profiles presented more of the appearance of a "normal" soil profile with the humus at the top and the gray colors getting progressively lighter toward the lower portions. The major change in these profiles was a greater concentration of the quartzite fragments at the position of Levels 5 and 6.

A series of soil samples was collected from the center of the E7-E8 profile. Nine samples were taken from the mid-point of the 9 levels exposed on the profile. Theodore Peck, soils major at the University of Wisconsin, kindly tested the samples for acidity and "available" phosphorus content. The results are presented in Table 1.

TABLE 1

Acidity and "Available" Phosphorus Content of Soil Sample from the E7-E8 Profile, Durst Rockshelter, Sk2

Level	Depth in in.	pH	Phosphate
1	0 - 4	6.0	140
2	4 - 8	5.7	175
3	8 -12	5.5	175
4	12-16	5.4	180
5	16-20	5.5	60
6	20-24	5.5	80
7	24-28	5.5	40
8	28-32	5.6	40
9	32-36	5.7	40
Bedrock.			

The E7-E8 profile was situated directly underneath the overhang at a point which received a concentration of runoff water from the hill over the shelter. The leaching action of this water probably explains the low pH values.

Two other samples, from C8-D8 profile, were also tested by Mr. Peck. One from the B layer gave a pH reading of 7.8 and 100 for phosphate. The other, from the Black (C) layer had a pH of 6.8 and a phosphate content of 300. This area was not subjected to the excessive amount of leaching as the E7-E8 profile and would appear to be characteristic for these two layers of the shelter proper.

The top surface of the Black layer was used to modify the excavation procedure. Where this surface intersected one of the arbitrary levels, the materials from the level were separated as to whether they occurred above or below that surface.

Features

Aside from the burial, described below, and a few rodent burrows, the only irregularities noted in the deposit were pits. As shown on Map 1, the pits tended to be placed near the rear wall where the ceiling was quite low. In diameter they ranged from 1.4 feet to 3.0 feet and, in thickness, from 0.4 to 1.0 feet. Animal bone refuse was found in all of them. Since there was no great evidence of fire either on the sides of the pits or their contents, it seems probable that they were used for storage and/or disposal of refuse. The lower boundaries could be easily traced but the upper limits, or elevations of the surfaces from which they were dug, were not distinct. The figures

given in the detailed descriptions which follow refer to the surface depths where the outlines were definitely observed. The artifacts found in the pits were not necessarily "in association," as the pits were probably filled either accidentally or purposely with nearby surface soil which may have contained a mixture of artifacts brought up from lower depths when the pits were dug and other surface materials.

Feature 1. This pit was slightly oval in outline, 2.5 x 3.0 feet. Depth was from 0.4 to 1.0 feet below the surface. A few bits of charcoal were present in the fill. The artifacts included a small triangular projectile point, a small diagonal-notched projectile point, a section of deer antler with a cut end, and 1 grit-tempered, cord-marked rimsherd with a smoothed lip and cord-wrapped paddle edge impressions, horizontal on the exterior surface and vertical on the interior surface. There were also 13 grit-tempered, cord-marked body sherds, 3 grit-tempered, smooth-surface body sherds, and 1 shell-tempered, cord-marked body sherd in the fill.

Feature 2. The diameter was 1.75 feet; depth, 0.5 to 1.2 feet. Three shell-tempered, and 1 grit-tempered, cord-marked body sherds were in the fill.

Feature 3. This pit was 2.5 feet in diameter; 0.3 to 1.3 feet in depth. It contained 2 bases of side-notched projectile points. a triangular projectile point, a split bone awl, and a mussel shell scraper. Twenty-six grit-tempered, cord-marked sherds were also present.

Feature 4. Diameter 3 feet, depth 0.6 to 1.3 feet. The artifacts were 4 potsherds. Three were tempered with grit, the other with shell. All were cord-marked.

Feature 5. Diameter 1.4 feet, depth 0.6 to 1.1 feet. A grit-tempered, cord-marked sherd and a shell-tempered rimsherd were found in it. The surface of the latter had been carelessly smoothed and decorated with the loop end of a twisted cord. The lip bears cord-wrapped stick impressions. A row of closely spaced nodes, 22 mm. below the lip encircled the pot represented by this sherd.

Feature 6. Only 1 grit-tempered, cord-marked body sherd was found in this pit which was 1.5 feet in diameter and 0.7 to 1.1 feet in depth.

Feature 7. The diameter of this pit was 1.5 feet and the depth, 0.8 to 1.7 feet. The pit contained a small notched projectile point, a fragmentary triangular point, a shell-tempered, cord-marked body sherd and 13 grit-tempered, cord-marked potsherds, one of which is of the Madison Cord Impressed type, another is a plain rimsherd with a smoothed, square lip.

Burials

The excavated area of this site contained remains of two human individuals. One of them, Burial 1, was in a grave and was represented by a more or less complete skeleton. The other individual was represented by a single bone found mixed with the refuse of the deposit.

Burial 1 was located partially in Squares D6 and D7 where the deposit was 2.5 feet in thickness. The portion lying in Square D6 was exposed first (Fig. 6), leaving the C6-D6 profile above the burial. Though searched for, the horizontal outline of the pit was not clearly determined in Square D6. The profile, however, showed that a pit had been dug down through the Black layer. In addition, the profile showed an unbroken horizontal line above the burial at a depth of 1.5 feet. In order to expose the rest of the burial, the southwest quarter of

Fig. 6. Burial 1, Durst Rockshelter, Sk2.

Square D7 was removed in the standard 4-inch levels. During the excavation of Level 6 of this Square, a careful search revealed a pit outline at a depth of 1.9 feet. Apparently, the grave was dug during the deposition of Zone 5 at this site.

The grave was oriented WSW-ENE and was 1.8 feet wide and about 3.5 feet long. It was shallow, about 0.5 feet deep, with 0.2 feet of sand remaining between the body and the bedrock floor of the shelter. The body was fully flexed on the left side with its head at the western end of the pit and its face toward the north (Fig. 7). The skull was crushed and the bones were only in a fair state of preservation. A few bones of the feet were not found. There were no grave goods.

For the following observations on Burial 1 the writer is indebted to Dr. William S. Laughlin, Department of Sociology and Anthropology, * University of Wisconsin. The individual was a small and slight, old adult female (age 56-75 years). Cranial index 76.74. The nose was prominent. The olecranon foremen was present only on the left humerus. Of other observed characters, both the right and left tympanic plates had dehiscences and marginal foramina. Unfortunately, the bones

Fig. 7. Burial 1, Durst Rockshelter, Sk2.

* Now a separate Department of Anthropology.

are in such fragmentary condition that the usual set of skeletal measurements cannot be given. An arthritic condition was present on some of the vertebrae causing collapse and wedge-shaped bodies. On the skull, arthritis had caused bone erosion and growth on the mandibular fossae and a similar condition prevailed on the left mandibular condyle (right missing). The teeth had suffered extreme wear, due to advanced age and the pathology noted for the mandibular fossae and condyle.

The second individual was represented by a right maxilla and part of the zygomatic. There were no signs of rodent gnawing on this fragment which was found mixed with the refuse of Level 3 in Square E6. Whether the occurrence was due to transport by rodents, or human digging activities, from a burial in the unexcavated portions of the site or some other cause is not known.

Cultural Remains

Analysis

In order to facilitate the analysis of cultural materials, the levels of the various squares have been grouped into 6 zones as follows:

Zone 1 includes:	Level 1 of all squares.
Zone 2 includes:	Level 2 of all squares (not present in Row A).
Zone 3 includes:	Level 3 of all squares (not present in Row A).
Zone 4 includes:	Level 4 of all squares (not present in Row A or Square B4).
Zone 5 includes:	All below Level 4 and above the upper surface of the Black Layer in Rows D and E; Levels 5 and 6 of Rows F and G (not present in Rows A, B and C).
Zone 6 includes:	All below Level 4 in Row C; all below the upper surface of the Black Layer in Rows D and E; all below Level 6 in Rows F and G (not present in Rows A and B).

Three things about this grouping require explanation. First, why Zones 2 and 3 are not represented in Row A; Zone 4, not in Row A or Square B4; etc. The reason is that toward the rear of the shelter the rock floor slanted upward rather

steeply and the culture bearing deposit was thinner in these parts. Second, why Zone 6, but not Zone 5, could be present in Row C. The reason is that in these squares, the upper surface of the Black Layer was present at the bottom of Level 4. If there had been, in fact, a "Zone 5 occupation" it has been compressed in terms of the analysis into the Zone 4 of this row of squares. This, it is believed, does not seriously affect the results of the analysis. Third, the assignment of Levels 5 and 6 in Rows F and G to Zone 5 has been done on a somewhat arbitrary basis. It will be remembered that here the natural stratigraphy was not very distinct. In view of the total depth of these rows of squares and the manner in which the Black Layer appeared to "fade out," it was decided to give Zone 5 a thickness of 8 inches below the bottom of Zone (Level) 4. This is a slight increase over the thickness of this zone in Row E, but the total deposit was thicker here.

The traditional manner of breakdown into artifact catagories according to material is used in this analysis. It should be emphasized that we are not dealing with the remains of a single culture, but with the remains of several cultures spanning thousands of years of time. It is therefore necessary to deal with these cultural remnants on a more abstract level than we could if we were dealing with the remains of a single culture and could give a functional breakdown; for instance, into artifact groupings according to economic life, ceremonial life, etc. The attempt to separate "cultures" out of this mass of material comes at a later stage in the analysis.

Within each category of material we have utilized a formal breakdown. Except for those forms which have previously been assigned type names, the groupings by form have been made on the basis of the materials themselves and are not garnered from any preconcieved classificatory schemes. Artifact frequencies are given in Table 5.

Projectile Points

A total of 283 were found at this site. For purposes of analysis, they have been sorted into 8 typological categories plus 1 group of unclassified forms. The first 8 groups are defined by criteria of shape only. The total outline, with emphasis on

Zone	A. Raddatz Side-notched		B. Durst Stemmed		C. Monona Stemmed		D. Large triangular		E. Small diagonal-notched		F. Side-notched triangular		G. Small triangular		H. Straight-stemmed		I. Unclassified		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1			(3)	5.3					(9)	15.8	(7)	12.3	(31)	54.3	(2)	3.5	(5)	8.8	57	100.0
2	(1)	1.7	(6)	10.3	(1)	1.7	(1)	1.7	(4)	6.9	(9)	15.5	(28)	48.3	(1)	1.7	(1)	12.1	58	99.9
3	(6)	14.0	(6)	14.0	(5)	11.6	(1)	2.3	(2)	4.6	(1)	2.3	(9)	20.9	(2)	4.6	(11)	25.6	43	99.9
4	(3)	7.9	(14)	36.8	(7)	18.4	(1)	2.6	(2)	5.3			(3)	7.9	(2)	5.3	(6)	15.8	38	100.0
5	(5)	10.9	(31)	67.4	(3)	6.5									(1)	2.2	(6)	13.0	46	100.0
6	(25)	61.0	(3)	7.3	(5)	12.2									(2)	4.9	(6)	14.6	41	100.0
Total	40		63		21		3		17		17		71		10		41		283	

TABLE 2. Frequency of Projectile Points, Durst Rockshelter, Sk2

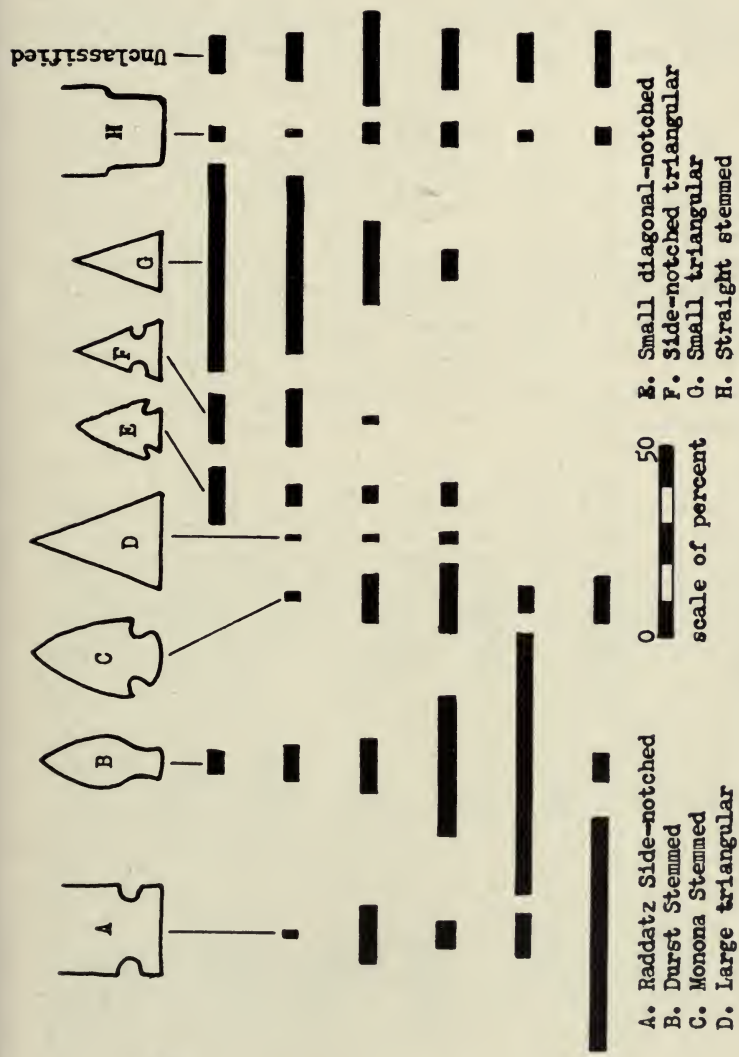


Fig. 8. Percentage Frequency of Projectile Points, Durst Rockshelter, Sk2.

TABLE 3. Dimensions of Projectile Point Types (mm.)
Durst Rockshelter, Sk2

	Length			Stem Length			Width			Thickness		
Zone	No.	Range	Av.	No.	Range	Av.	No.	Range	Av.	No.	Range	Av.
A. Raddatz Side-notched												
1												
2				(1)		14.0				(1)		10.0
3				(1)		10.0	(1)		21.0			
4	(2)	33-37	35.0	(2)	10-11	10.5	(2)	20-22	21.0	(2)	7-8	7.5
5				(3)	7-13	11.0						
6	(6)	24-43	36.3	(20)	6-18	10.7	(14)	15-44	24.8	(12)	5-10	7.7
Tot.	(8)	24-43	36.0	(27)	6-18	10.8	(17)	15-44	24.1	(15)	5-10	7.8
B. Durst Stemmed												
1	(1)		33.0	(1)		13.0	(1)		18.0	(1)		7.0
2	(3)	25-36	32.0	(5)	9-17	13.6	(5)	14-22	18.2	(5)	6-9	7.2
3	(4)	28-34	31.2	(5)	11-16	13.0	(5)	16-20	17.4	(5)	6-8	7.2
4	(4)	29-35	32.7	(8)	12-15	13.6	(8)	13-20	15.6	(10)	5-8	6.8
5	(13)	21-48	31.1	(25)	9-17	13.4	(23)	13-25	17.0	(27)	5-10	6.9
6				(2)	14-16	15.0	(1)		15.0	(1)		6.0
Tot.	(25)	21-48	31.6	(46)	9-17	13.5	(43)	13-25	17.1	(49)	5-10	6.7
C. Monona Stemmed												
1												
2				(1)		9.0				(1)		5.0
3	(1)		38.0	(3)	10-12	10.7	(1)		19.0	(2)	5-7	6.0
4	(3)	26-38	31.3	(6)	8-14	12.0	(4)	18-21	19.7	(4)	5-8	6.7
5	(1)		34.0	(2)	9-13	11.0	(2)	19-21	20.0	(2)	6-8	7.0
6	(1)		39.0	(2)	8- 8	8.0	(2)	19-21	20.0	(2)	5-6	5.5
Tot.	(6)	26-38	35.8	(14)	8-14	10.7	(9)	18-21	19.8	(11)	5-8	6.3
D. Large triangular												
1												
2							(1)		29.0	(1)		5.0
3	(1)		37.0				(1)		27.0	(1)		5.0
4	(1)		36.0				(1)		27.0	(1)		6.0
5												
6												
Tot.	(2)	36-37	36.5				(3)	27-29	27.7	(3)	5-6	5.3
E. Small diagonal notched												
1	(4)	20-24	21.5	(8)	6- 8	7.1	(8)	12-18	15.3	(9)	3-4	3.6
2	(2)	12-30	24.0	(3)	4- 8	6.3	(3)	14-18	15.6	(3)	3-5	3.6
3	(2)	22-23	22.5	(2)	5- 7	6.0	(2)	13-14	13.5	(2)	3-4	3.5
4				(2)	5- 8	6.5	(2)	16-17	16.5	(2)	3-4	3.5
5												
6												
Tot.	(8)	18-30	22.4	(15)	4- 8	6.5	(15)	12-18	15.3	(16)	3-4	3.5
F. Side notched triangular												
1	(2)	17-18	17.5	(5)	8-11	10.0	(5)	12-18	15.6	(5)	3-4	3.8
2	(5)	21-34	27.4	(9)	7-10	9.0	(9)	13-17	15.2	(9)	3-5	3.9
3	(1)		17.0	(1)		9.0	(1)		15.0	(1)		4.0
4												
5												
6												
Tot.	(8)	17-34	23.5	(15)	7-11	9.3	(15)	12-18	15.5	(15)	3-5	3.9
G. Small Triangular												
1	(21)	15-32	22.6				(29)	12-24	16.6	(31)	3-6	4.0
2	(19)	17-33	24.6				(27)	12-21	16.6	(28)	2-8	4.0
3	(3)	20-27	22.7				(9)	15-24	18.7	(9)	3-5	3.9

4	(2) 20-28 24.0		(3) 14-21 16.7	(3) 3-6 4.3
5				
6				
Tot.	(45) 15-33 23.5		(68) 12-24 16.9	(71) 2-8 4.0

H. Straight stemmed- Stem Width

1		(2) 18-18 18.0		
2		(1) - 17.0		
3		(2) 18-18 18.0		
4		(2) 18-19 18.5		
5		(1) - 17.0		
6		(2) 17-18 17.5		
Tot.		(10) 17-19 18.0		

TABLE 4. Frequency of Basal Grinding and Variations in Basal Form of Raddatz Side-Notched Projectile Points, Durst Rockshelter, Sk2.

Zone	Total Spec.	Concave base	Straight base	Convex base	? base	Basal Grinding
1						
2	1	1				1
3	6	1	5			6
4	3		1	2		1
5	5		4		1	1
6	25	2	19	3	1	15
Totals	40	4	29	5	2	24

Fig. 9. Raddatz Side Notched Projectile Points, Durst Rockshelter, Sk2. Provenience: A-C, Zone 3; D-E, Zone 4; F-H, Zone 5; I-W, Zone 6.

variations in method of hafting, was considered important. Secondary characteristics, such as material and basal grinding are noted under each group.

Table 2 and Fig. 8 give the frequencies of the 9 groups in the 6 zones of the deposit. Table 3 gives the ranges and mean dimensions for the points in each of the first 8 groups. Since most of the larger points have been resharpened or are broken, the measurements should not be accepted uncritically. The length dimensions of the first three groups are particularly untrustworthy.

A. **Raddatz Side-notched** * (Fig. 9). This group is composed of fairly large projectile points, presumably of dart, rather than arrow, size. The basic form is lanceolate or parallel-sided in outline with a straight, concave, or convex base. The notches are made perpendicular to the long axis. All of the points of this form were made of the local chert which occurs in the limestones of the Driftless Area. Fig. 9, T, is a sharp-edged "bunt." Only 8 of the 40 specimens were whole and all show considerable signs of having been resharpened by additional chipping on the tip and edges of the blade. Sixty per cent of these specimens have grinding on the base. Frequency of the variations in the form of the base and basal grinding are shown in Table 4.

The Raddatz Side-notched type bears a certain typological resemblance to a type designated **Madison Side Notched** (Baerreis 1953b:154). The latter is described from a small sample but appears to differ in having a thinner blade and a shorter stem length. The Madison points are finished with fine pressure flaking which has resulted frequently in producing very fine serrations on the edges of the blade. These differences may be due, in part, to the fact that the Madison points from the Airport site are made of a blue-gray chert which is finer grained than the chert from which the Raddatz points are made. If Baerreis's statement (**ibid.**) that the Madison points "have a wide distribution in Woodland components in the Madison area" is correct, we are justified in establishing

* This type definition is also based on 31 specimens from the Raddatz Rockshelter, Sk5 (Wittry 1959).

a separate type for the heavier Raddatz point which have a demonstrated placement in the Archaic Period. It is possible that the Madison points represent a modified survival of the Raddatz points, but there is not enough evidence available to strengthen this suggestion.

B. **Durst Stemmed** (Fig. 10). This is a new type previously undefined. It has been named on the basis of a distinctive form and a fairly well defined stratigraphic position in the Durst Rockshelter and in the Gov. Dodge State Park Rockshelter. Except for one specimen of milky quartz from Zone 4, all examples at the Durst site were made of local chert. This type was produced by the removal of long shallow notches from the corners of a leaf-shaped blank. Fig. 10, F is a broken, unfinished specimen illustrating the contour of the blank befor the removal of the broad notches forming the stem. The shoulders are rounded and generally represent a transitional zone of curvature from the stem to the blade. The stem expands slightly to a gently rounded base in 57 out of the total of 63 points. On the remaining 6, the base is formed by a flat surface, part of the striking platform of the core from which the

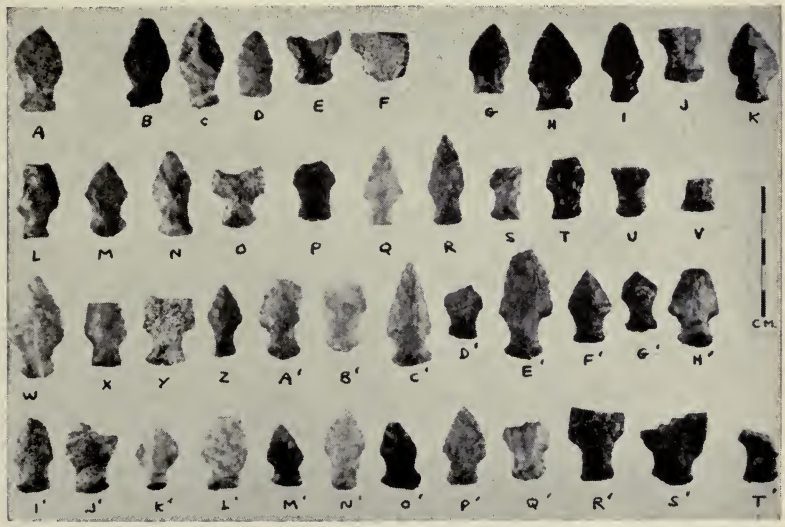


Fig. 10. Durst Stemmed Projectile Points, Durst Rockshelter, Sk2. Provenience: A, Zone 1; B-F, Zone 2; G-K, Zone 3; L-V, Zone 4; W-S', Zone 5; T', Zone 6.

flake for the blank was struck. Fig. 10, H', has been reworked into a sharp-edged "bunt." None of the points in this group were ground on the base.* Most of these specimens had been resharpened and are fragmentary. The dimensions for this type given in Table 3, therefore, should not be taken as characteristic. A cache of 10 Durst Stemmed projectile points found in Richland County "fashioned by the same hand" ranged in length from 1½ inches to 2¾ inches (38-70 mm.) (Brown 1907:65, Pl. 6).

C. **Monona Stemmed** (Fig. 11, A-J). This type was defined by Baerreis (1953:10). It is characterized by broad, shallow corner notches and a convex outline for the base and edges of the blade. Five of the 21 specimens of this type are made of a dark red chert, similar, if not identical, to the material described by Cooper (1933:69) as occasionally occurring above the catlinite beds in Barron and Rusk Counties. Fig. 11, A and

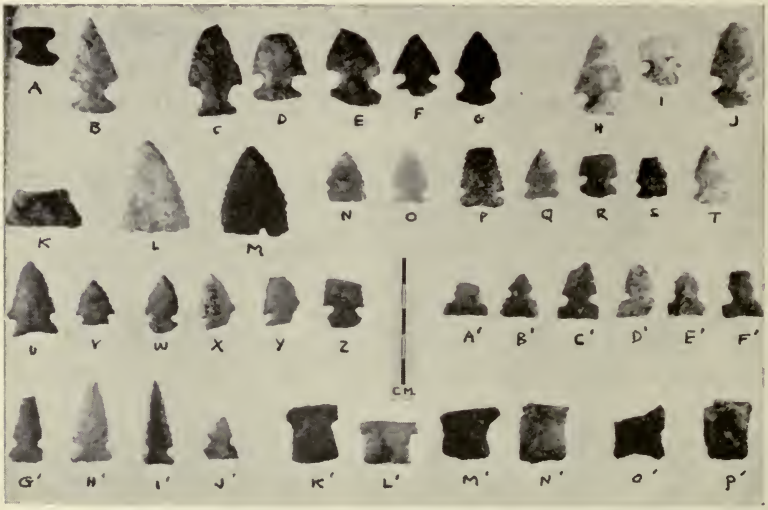


Fig. 11. Miscellaneous Projectile Point Types, Durst Rockshelter, A-J, Monona Stemmed; K-M, large triangular; N-Z, small diagonal notched; A'-J', side-notched triangular; K'-P', straight-stemmed. Provenience: N-T, A'-C', K', Zone 1; K, U, V, D'-I', Zone 2; A, B, L, W, X, J', L', Zone 3; C-G, M, Y, Z, M', N', Zone 4; H, O', Zone 5; I, J, P', Zone 6.

* Specimens from the Raddatz rockshelter bear basal grinding. This feature is an alternate for the type (Wittry 1959).

G, are made of this material. All others illustrated are of local chert.

D. **Large Triangular** (Fig. 11, K-M). Three specimens of triangular outline are placed in a separate group because they fell well outside the range of dimensions for the small triangular projectile points. Possibly, these three were used as a type of knife. All are of local chert.

E. **Small Diagonal-notched** (Fig. 11, N-Z). This group of 17 small thin projectile points is characterized by serrated edges of the blade, deep narrow corner notches, and a straight or convex base. Two are quartzite, the remaining 15, of local chert.

F. **Side-notched Triangular** (Fig. 11, A'-J'). Except for one quartzite specimen (Fig. 11, E'), the material is local chert. The basic form is an elongated triangle with side notches .

G. **Small Triangular** (Fig. 12). The small triangular projectile point was the most common type at this site. The usual form is a slightly elongated triangle with straight sides and base, but there are minor tendencies for these to be convex or concave. One point is white quartz, 12 are quartzite and 58 are local chert.

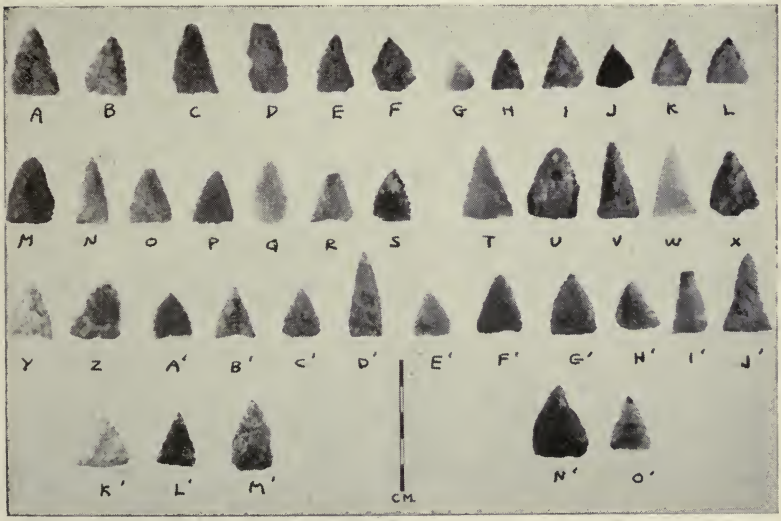


Fig. 12. Small Triangular Projectile Points, Durst Rockshelter, Sk2. Provenience: A-S, Zone 1; T-J', Zone 2; K'-M', Zone 3; N'-O', Zone 4.

H. **Straight Stemmed** (Fig. 11, K'-P'). Ten broken projectile points, all of local chert, have parallel-sided stems. The writer feels that since this group is based on a single feature, it will not have the same validity in analysis as groups or types which have a number of diagnostic features.

I. **Unclassified Projectile Points** (Fig. 13). All of the complete or near complete specimens are illustrated. All are local chert, with the one notable exception of Fig. 13, J. This is chipped of micaceous schist with subsequent grinding on the edges of the blade to produce bevels. This point is exactly of the same form as the beveled edge copper projectile point type I-GI (Wittry 1951). It is 85 mm. long, 27 mm. wide, and 3 mm. in thickness. Fig. 13, T, is also worthy of special description. It was found in Level 8 of Square F4. Its surface is weathered far more than any other chert specimen found at this site. Weathering has smoothed even the edges of the blade so it is not possible to determine if the bases were ground. Length, 62 mm.; width 23 mm.; thickness, 10 mm. The apparent attempts at fluting on the side illustrated are not duplicated on the reverse side. Fig. 13, S and V, are probably reworked from broken side-notched points.

Fig. 13. Unclassified Projectile Points, Durst Rockshelter, Sk2. Provenience: A-C Zone 1; D-I, Zone 2; J-N, Zone 3; O-P, Zone 4; G-R, Zone 5; S-W, Zone 6.

Scrapers (Fig. 14).

Chipped-stone scraping implements occurred in four forms at this site. Only 5 specimens had been chipped on both the ventral and dorsal surfaces into a "finished" outline. Two of this group may have been made from the broken tips of projectile points (B, D).

The second group consists of primary flakes upon which a scraping edge had been formed by secondary chipping. The edge may be on the end or side of the flake, rarely both. There is no further modification of the flake other than the purposely formed scraping edge.

"Small" scrapers were the most numerous. These are small end scrapers made from primary flakes. The original striking platform generally forms the base, opposite the scraping edge. There is no secondary chipping on the ventral surface which is formed by a single flake scar. Another general feature is that all of these specimens have chipping on part, or all, of the length along the edges. These scrapers resemble very closely the short end scrapers described by Witthoft (1952, pp. 478-79) from the Shoop site. Several of them bear the

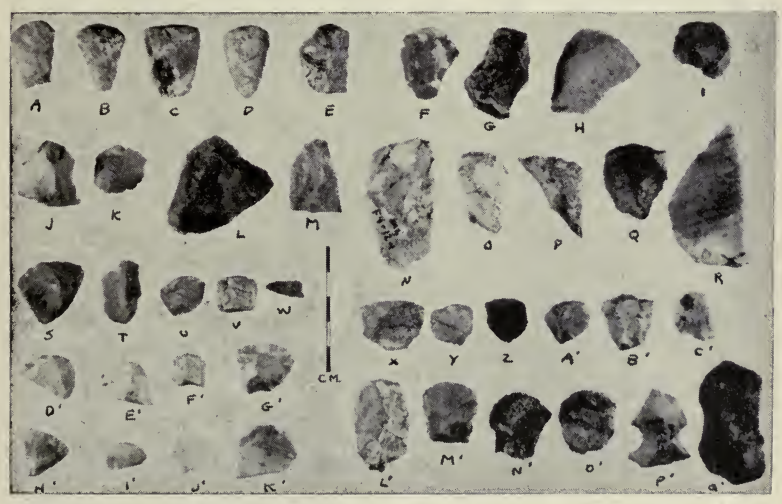


Fig. 14. Scrapers, Durst Rockshelter, Sk2. A-E, finished outline; F-R, large flake; S-O', small; P'-Q', concave edge. Provenience: A, B, F, G, Zone 1; H, I S, P', Zone 2; C, D, T, Zone 3; J, K, U, Zone 4; L, M, V, W, Zone 5; E, N-R, X-O', Q', Zone 6.

"graver spur" at one end of the scraping edge (X, Z, A' B', C', G', I') while several others exhibit only a suggestion of a spur. Two specimens (N', O') have 2 scraping edges on opposite ends of the flake, on opposite faces. N' also has a graver tip. All scrapers of this type are of local chert.

Two scrapers have concave edges. P', probably made from the blade of a broken projectile pont, has 2 such edges, 12 mm. in diameter. Q' is of quartzite and has a slightly concave scraping edge, 17 mm. long and 2 mm. deep.

Drills (Fig. 15)

All of the 10 drills found at this site were broken. Of the 6 specimens which have merely the tip broken off, 3 (Fig. 15, A-C) can be grouped together on the basis of having an expanded base, 14 to 16 mm. wide. Estimated total length of these specimens is about 35 mm., possibly more for the Zone 1 specimen.

A drill fragment from Zone 1 shows a finished outline, the base of which has been rechipped into a scraping edge; max-

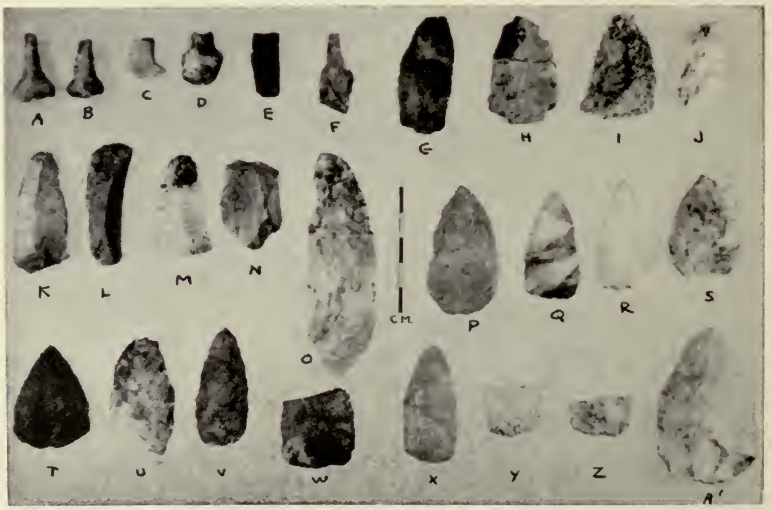


Fig. 15. Drills and Knives, Durst Rockshelter, Sk2. A-C, expanded base drills; D, combination drill-scraper; E, straight drill; F, irregular base drill; G-O, flake knives; P-Z, small ovate knives; A', medium-sized ovate knife. Provenience: A, D, G, Zone 1; B, H, P-S, Zone 2; C, E I, T, U, Zone 3; F, J, V, A', Zone 4; K, L, W, Zone 5; M-O, X-Z, Zone 6.

imum width of this specimen is 16 mm. (D). A straight drill from Zone 3 has a width of 11 mm. (E). Zone 4 produced a single specimen with an irregular base, 13 mm. wide and 18 mm. long; total length is estimated at 36 mm. (F).

Knives (Figs. 15. 16)

Flakes knives (Fig. 15, G-O) range in length from 28 to 90 mm. They are long, narrow primary flakes which have been modified on the edges by use, the small chip scars appearing on both faces.

Small ovate knives (P-Z) are those under 50 mm. in length. The blade and the base are convex in outline. On 1 specimen (S) the base has been reworked in a concave outline. All specimens except T, which is of quartzite, are of local chert. On 7 specimens the length ranges from 40 to 50 mm., averages 44.9 mm. On 18, the width ranges from 20 to 29 mm., averaging 25.4 mm. The average thickness is 7.6 mm. Some of these knives may be modified blades of projectile points (e. g., Q, R, V, X).

Fig 15, A', is a medium-sized ovate knife of local chert whose dimensions are 60, 37, 12 mm.

Irregular knives (Fig. 16, A-D) are those which have an asymmetrical outline. A total of 13, all of local chert, were found at this site. In size, they tend to be about the same as the small symmetrical knives. Eleven specimens range in length from 38 to 54 mm., average 43.5 mm. Thirteen specimens range in width from 22 to 34 mm., average 28.1 mm. Thickness averages 10.1 mm., somewhat greater than the small knives.

Kolterman Indented Base (Fig. 16, E-G) is a distinctive shape, basically triangular in outline with a shallow V-shaped indentation in the base. The type name is derived from the specimen found in Kolterman Mound 18 in association with a Madison Cord Impressed pottery vessel and a cremation which provided a radiocarbon date of 726 A. D. + − 250 years (Wittry and Bruder, 1955; Wittry, 1956). The type description rests on four complete specimens, 3 from the Durst site and the Kolterman example. They range in length 49 to 72 mm., (average 60 mm.) in width 31 to 39 mm. (average 33 mm.), and in thickness 5 to 8 mm. (average 6.5 mm.). The

extent of basal indentation ranges from 2 to 5 mm., average 3.7 mm. The Kolterman specimen and Fig. 16, F, G, are of quartzite; Fig. 16, E, is of gray chert and has one of the basal corners broken off. As the number of specimens measured for these statistics is small, we must consider the present ranges and averages as tentative. This type is interpreted as a knife rather than a projectile point because the 3 Durst speciments all show rechipping, presumably to resharpen, on the sides. The Kolterman Mound 18 knife is finely serated on the edges. There is no evidence of impact fracture at the tip as is frequently seen on projectile points.

A semi-lunar knife of brown chert came from Zone 6 (Fig. 16, H). Its dimensions are: length 77 mm., width 41 mm., and thickness 9 mm.

Seven fragments of large chipped blades were found, 5 in Zone 6 and 1 each in Zones 1 and 5. Of the 3 bases present. 2 are straight and 1 convex (Fig. 16, I, J).

Choppers are medium-to-large-sized pieces of chert which bear along one or more edges a chipped edge which has been

Fig. 16. Knives, Blades, Choppers, Gravers, and Chisel, Durst Rockshelter, Sk2. A-D, irregular knives; E-G, Kolterman Indented Base knives; H, semi-lunar knife; I-J, large blade fragments; K-L choppers; M-R, gravers; S, chisel bit. Provenience: A, Zone 1; E-G, S, Zone 2; B, Zone 3; C, M, N, Zone 4; O, Zone 5; D, H, I-L, P-R, Zone 6.

further modified by short interrupted flakes resulting from direct blows at a 90° angle as would be the case with a "chopping" function. The 9 specimens range from 50 to 92 mm. in greatest dimension (Fig. 16, K, L).

Gravers. Six small primary flakes bearing a graver tip were unearthed in the lower 3 zones (Fig. 16, Q-M). All are of local chert. The tips on 3 are exceedingly small but nevertheless are clearly purposely formed.

Fig. 16, S, is the bit of a chert "chisel," found in Zone 2. The cutting edge is slightly convex in outline and concavo-convex in cross section.

Rough Stone (Fig. 17)

Quantities of angular Baraboo quartzite were distributed throughout Zones 1-5, but occurred in greatest concentration in Zone 5. As mentioned above, these were carried to the site from a not-too-distant outcrop and were probably used for stone boiling.

Several whole or fragmentary water worn rocks were found (Fig. 17, E-G). The materials — quartzite, granite, and con-

Fig. 17. Rough Stone, Durst Rockshelter, Sk2. A-D, Sandstone abraders; E-F, quartzite hammer and/or grinding stone; G Sandstone grinding stone. Provenience: D, Zone 1; A,B, Zone 2; E, G, Zone 3; F, Zone 5, C, Zone 6.

glomerate — show that all had been brought in from some outside source. All show signs of use as hammerstones. It is impossible, however, to tell if the flat and slightly convex surfaces on them are the result of natural water action or from their use as grinding stones. Two sandstone specimens, however, exhibit definite signs of being used for grinding.

Lumps of the Jordan sandstone, the formation in which the shelter was formed, were used as abrading implements. As this material is quite friable, it is possible that some implements of this type had eroded beyond recognition and were overlooked in the field. Eight specimens exhibiting clear evidence of use were recovered. All, save one, are amorphous lumps, the only modification of the surface being the wide or narrow grooves resulting from use. The one specimen had been shaped into a sub-rectangular bar 40 mm. in length, and bears a groove on two faces. The grooves are 5 mm. wide (Fig. 17, B).

The other specimens range from 42 to 120 mm. in maximum dimension and bear from 1 to 7 grooves. It is apparent from the character of the grooves that these implements had been put to a variety of uses. The majority of the grooves are straight, 5 to 7 mm. wide and from 2 to 5 mm. deep (Fig. 17, A). One specimen bears several curved grooves, and may have served to sharpen awls. Two have very wide (35 to 45 mm.) grooves (Fig. 17, D). Zone 6 produced a small fragment of sandstone with a smoothed edge resulting from use as an abrader (Fig. 17, C). The distribution of these characteristics in the various zones is tabulated in the list of non-ceramic artifacts for the site.

There were 3 miscellaneous stone artifacts excavated. One, from Zone 2, is a sandstone bead, 25 mm. in diameter and 14 mm. thick. The perforation is 4 mm. in diameter. A small crudely grooved quartz crystal pendant came from Zone 2. From Zone 4 came a rather peculiar implement. It is rectanguloid in outline, 76 mm. long, and has a wedge-shaped cross-section. Both faces bear numerous longitudinal scratches while the two edges are worn. It is listed as a "polisher" although the scratches indicate a dual purpose.

Bone (Fig. 18)

Animal bone refuse and bone artifacts in Zones 1-5 were well preserved. The soil sample from the Brown Layer (Zones 2-5) underneath the overhang gave a moderate alkaline reading of 7.8. Bone in the Black Layer (Zone 6) was not well preserved. Although this zone was only slightly acid (pH value, 6.8), it was very compact and not as well drained as the soil above.

Bone awls were made by abrading a sharp point on suitable bone splinters (Fig. 18, A-F). The longest complete specimen measured 152 mm., but several of this type were represented only by broken tips. Two awls were of the common deer ulna type.

Four awls or needle fragments show more care in their manufacture. G, in the figure, is the tip of a deer metatarsal "skewer." H is the basal section of a similar implement which has a drilled perforation near the base, 3 mm. in diameter. Two mid-sections of long thin bone splinters are abraded and

Fig. 18. Bone Artifacts, Durst Rockshelter, Sk2.
A-F, split bone awls; G, H, "skewer" fragments; I-K antler flakers; L, unidentified object ("mesh-spreader"?); M, beaver incisor chisel; N, O, drilled fox canine teeth; P, Q, chipped bone scrapers. Provenience: N, O, Zone 1; A, B, K P, Zone 2; C, J, M, Zone 3; D, G-I, L, Zone 4; E, Q, Zone 5; F, Zone 6.

polished on the surface. Their lengths are 23 and 48 mm.: widths, 6 mm. Possibly, these are fragments of the long, eyed bone needles, but this is not certain.

Antler flaking implements were present in all zones, and all, save 2, had rounded tips (I, K). Two specimens from Zone 3 had wedge-shaped ends (J).

An unidentified object which has been listed on the inventory of artifacts as a "mesh-spreader," was found in Zone 4. It it an exceedingly thin rectangle of bone, 24 by 15 mm. (Fig. 18, L). Both faces bear numerous thin, unoriented scratches. The edges, particularly the two longer ones, are moderately polished. One beaver incisor chisel, with a resharpened bit, was found in Zone 3 (M). Bone ornaments were restricted to 2 drilled fox canine teeth from Zone 1 (N, O).

Two unique bone implements were manufactured by chipping 1 or 2 edges on the interior surfaces of deer leg bone splinters. The exterior surfaces are not chipped. Fig 18, P, has one such edge and a sharpened awl point at one end, the point of which is worn flat. Fig. 18, Q, has two edges. The chipped edges of both specimens have small grooves, and show wear at right angles to the edge such as would result from a scraping function.

Eleven worked fragments of turtle shell were found. Ten, including 6 finished edges, are worked pieces of carapace and evidently are parts of 3 or more bowls. A plastron fragment from Zone 5 has a perforation 5 mm. in diameter and may be part of a rattle.

Shell (Fig. 19, A-G)

Shell, either in the form of refuse or artifacts, was not abundant in the deposit. One fragmentary shell hoe was found in Zone 2 (Fig. 19, A). Nine shell valves had been used as scrapers. Most of them were represented by fragments having a worn edge. The one illustrated (Fig. 19, C) and one other, show wear on the end rather than the side. Zone 5 produced a small irregular notched pendant (Fig. 19, D), 29 mm. in length, cut from a valve. Possibly, this was used as a fish-

lure. Part of the handle of a shell "spoon" was found in Zone 3 (Fig. 19, B). The end bears small serrations 2 to 3 mm. apart.

There were 3 beads made from snail shells (Fig. 19, E, F, G). They were made from **Anculosa** shells, rubbed flat on one side to produce a perforation.

Pottery Pipe (Fig. 19, H)

A small pottery platform pipe, similar to those found at Hopewell sites in Illinois, was found in Level 5 (Zone 5) of Square D5. It is sparsely tempered with fine sand and contains a few large holes where inclusions had been leached or fired out. Over-all length is 42 mm. with a bowl height of 20 mm.

Fig. 19. Shell Artifacts and Pottery Pipe, Durst Rockshelter, Sk2. A, hoe; B handle of "spoon"; C, scraper, D, pendant; E-G, snail shell beads; H, pottery pipe. Provenience: G, Zone 1; A, Zone 2; B, C, E, Zone 3; F, Zone 4; D, H, Zone 5.

TABLE 5. Frequency of Nonceramic Artifacts Durst Rockshelter, Sk2 (Features excluded).

	Zone						
	1	2	3	4	5	6	Total
CHIPPED STONE							
Projectile Points (total)	57	58	43	38	46	41	283
Raddatz Side-notched		1	6	3	5	25	40
Durst Stemmed	3	6	6	14	31	3	63
Monona Stemmed		1	5	7	3	5	21
Large triangular		1	1	1			3
Small diagonal-notched	9	4	2	2			17
Side-notched triangular	7	9	1				17
Small triangular	31	28	9	3			71
Straight stemmed	2	1	2	2	1	2	10
Unclassified	5	7	10	6	6	6	41
Scrapers (total)	6	6	3	5	6	31	57
Finished outline	2		2			1	5
Large flake	4	4		4	4	7	23
"Small"		1	1	1	2	22	27
Concave edge		1				1	2
Drills (total)	2	3	3	1	1		10
Expanded base	1	1	1				3
Finished base	1						1
Straight sided			1				1
Irregular base				1			1
Drill tip		2	1		1		4
Knives (total)	6	10	8	9	8	20	61
Flake	4	2	1	2	4	7	20
Small Ovate (up to 50 mm.)		4	4	2	3	10	23
Medium-sized ovate				1			1
Irregular outline	2	1	3	4	1	2	13
Kolterman Indented Base		3					3
Semi-lunar						1	1
Choppers					1	8	9
Gravers				2	1	3	6
Chisel		1					1
Utilized flakes	15	15	11	7	20	37	105
Unidentified fragments	18	18	27	17	30	59	169
Chert and quartzite flakes	571	496	466	420	839	2265	5057
ROUGH STONE							
Sandstone abrader (st. narrow grooves)	1	3	1				5
Sandstone abrader (curved grooves)		1					1
Sandstone abrader (wide grooves)	1	1					2

Sandstone abrader (flat edge)						1	1
Hammerstone		1	1	2	2	3	9
Grinding stone			2				2
Sandstone bead		1					1
Quartz crystal pendant		1					1
"Polisher"				1			1
BONE							
Split bone awl	2	4	4	1	3	1	15
Deer ulna awl		2					2
Deer metatarsal "skewer" frag.				2			2
Mat needle frag.						2	2
Antler flaking implement	2	8	4	4	1	1	20
"Mesh-spreader"?				1			1
Beaver incisor chisel			1				1
Drilled canine teeth	2						2
Chipped bone scraper		1			1		2
Worked turtle shell frag.	1	5	2	2	1		11
SHELL							
Hoe		1					1
Scraper		3	2	2	1	1	9
Pendant					1		1
Spoon frag.			1				1
Anculosa bead	1			1	1		5
Pottery Platform Pipe					1		1
Pottery Platform Pipe					1		1

Ceramics

The pottery at this site, as in most other rockshelters, was in a very fragmentary condition. No complete vessels were found and a rather large amount of time was spent, with very little success, attempting to piece together sherds into more or less complete vessels. The physical characteristcs of a large portion of the sherds has been changed from their original conditions by such activities as refiring by subsequent fires, lime deposition, leaching, and oxidation or reduction by soil conditions. The descriptions refer to the original condition insofar as can be determined. For an excavated site in Wisconsin, however, a relatively large number of sherds were found. Their analysis has been conditioned by two important factors: (1) the lack of an adequate series of established pottery types for the Wisconsin area, and (2) the nature of the ceramic remains at this site. Because of these factors, it was necessary to define some new types which apply primarily to the pottery of this site and a limited number of other sites where noted.

Since it was not possible to sort all of the sherds into types, a number of other categories were set up in order to take into account groups of similiar sherds which did not meet the standards of a type description. It did not seem justifiable, for instance, to establish types for groups of body sherds which could not be correlated with any form of vessel shape or decoration. Some of these categories may eventually be included in types yet to be defined by future work. For the present, both the named types and the unnamed categories serve as descriptive tools to be used in analysis and for whatever chronological, comparative, or interpretative ends they might serve.

Grit- and shell-tempered wares were present at this site. The shell-tempered pottery, although a rather small minority, was present in sufficient quanitity and uniformity of characteristics to permit the definition of two closely related types. The grit-tempered sherds, on the other hand, exhibited a much wider range of variation in surface finish, decoration, and form. The paste of the various grit-tempered sherds, although not identical, was so similar that it could not be used as a sorting criterion. Whatever variations in material, amount, size, etc. were present appeared in association with each of the variations in surface finish and decoration. Aside from the division of grit- and shell-temper, then, the types and categories are established mainly on surface finish and decoration. Form, except for the configurations of the neck, rim, and lip, could not be determined in most cases. Bodysherds and rimsherds, therefore, are tabulated separately. The category of grit-tempered, cord-marked bodysherds (Category 5) undoubtedly contains the bodysherds from several of the rim types and categories. It is not apparent to which rim forms, if any, bodysherd categories 1-4 apply. The shell-tempered types, Baraboo Cord-marked and Baraboo Net-marked, are the same for the bodysherd and rimsherd tabulations.

Bodysherds (Table 6, Fig. 20)

Category 1. (16 sherds) Grit-tempered; smoothed, imperfectly polished surface, bearing smooth rocker impressions. Apparently well fired, but most of these sherds show evidence

Zone	Category 1. Grit-tempered, smooth surface Smooth rocker impressions		Category 2. Grit-tempered, smoothed-over-net-marked surface		Category 3. Grit-tempered, smoothed-over-cord-marked surface, dentate rocker impressions		Category 4. Grit-tempered, smooth surface		Category 5. Grit-tempered, cord-marked surface		Category 6. **Baraboo Cord-marked**		Category 7. **Baraboo Net-marked**		Totals	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	(8)	1.3	(1)	0.2	(2)	0.3	(7)	1.2	(569)	94.7	(8)	1.3	(6)	1.0	(601)	100.0
2	(6)	0.7	(6)	0.7	(8)	0.9	(31)	3.6	(750)	88.4	(35)	4.1	(12)	1.4	(848)	99.8
3	(2)	0.2	(8)	1.0	(2)	0.2	(29)	3.7	(640)	82.2	(57)	7.3	(41)	5.3	(779)	99.9
4			(3)	0.9	(2)	0.6	(15)	4.2	(245)	68.0	(61)	16.9	(34)	9.4	(360)	100.0
5			(1)	0.9			(4)	3.5	(77)	67.0	(19)	16.5	(14)	12.2	(115)	100.1
6					(1)	2.3	(2)	4.5	(35)	79.6	(2)	4.5	(4)	9.1	(44)	100.1
Totals	16		19		15		88		2316		182		111		2747	

TABLE 6. Frequency of Bodysherds, Durst Rockshelter, Sk2.

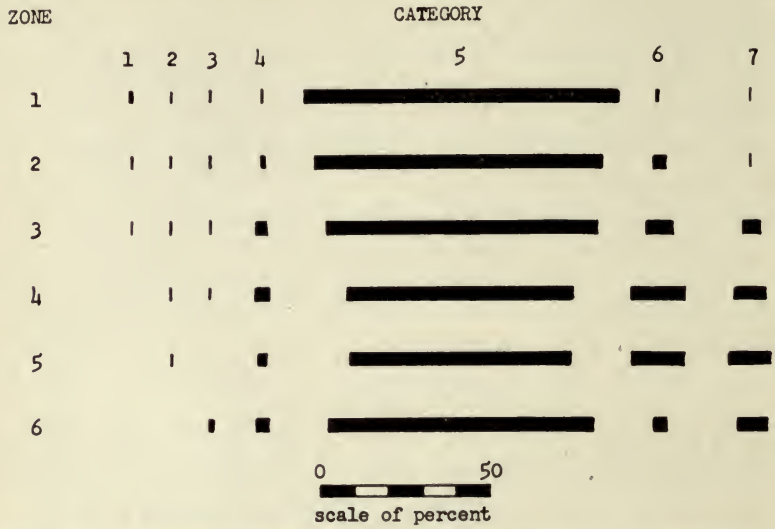


Fig. 20. Percentage Frequency of Bodysherds, Durst Rockshelter, Sk2.

of accidental refiring. Color ranges from a uniform tan to a uniform gray. Thickness: range 4-7 mm., average 6.0 mm. These sherds may be from a single vessel.

Category 2. (19 sherds) Grit-tempered: crudely smoothed over net-marked surface. Net-marks still visible, mesh size about 7 mm. square. Color tan to light gray. Thickness: range 6 to 10 mm., average 8.0 mm. These sherds may be from a single vessel.

Category 3. (15) sherds) Grit-tempered: smoothed-over-cord-marked surface bearing rocked dentate stamp impressions. Brown exteriors to gray interiors. Thickness: range 5-8 mm., average 7.3 mm. These sherds may be from a single vessel.

Category 4. (88 sherds) Grit-tempered; smooth surface. A few sherds show smoothing over cord-marking, but in most cases the smoothing is complete. Color: light tan to brown exteriors, brown to gray interiors, some cores are gray. These sherds are variable in color, thickness, and degree of smoothing and may represent several vessels. Thickness: range 5-13 mm., average 7.0 mm.

Category 5. (2316 sherds) Grit-tempered; cord-marked surface. It is obvious that many vessels are represented and likely that several rim types and categories would correlate with bodysherds of this category. Color is quite variable. The thickness has been tabulated according to Zones and is presented in Table 7.

TABLE 7. Thickness of Category 5 (grit-tempered, cord-marked) Bodysherds, Durst Rockshelter, Sk2.

(mm.)

Zone	3	4	5	6	7	8	9	10	11	12	16	Total	Mean
1	26	114	198	150	52	19	10					569	5.4
2	47	149	248	177	84	35	8	2				750	5.3
3	48	142	194	122	76	37	14	6	1			640	5.4
4	5	38	56	47	34	32	20	12	1			245	6.4
5	4	14	19	13	9	7	5	3		2	1	77	6.3
6	2	6	12	4	6	3		2				35	5.7
Tot.	132	463	727	513	261	133	57	25	2	2	1	2316	

Category 6. (182 sherds) **Baraboo Cord-marked.** Shell-tempered, cord-marked surface. See type description (rimsherd Category F).

Category 7. (111 sherds) **Baraboo Net-marked.** Shell-tempered, net-marked surface. See type description (rimsherd Category G).

Rimsherds (Table 8, Fig. 21)

Category A. (70 sherds) **Madison Plain.** (Figs. 22, 23) This pottery type was defined by Keslin (1957) from Dodge County materials. Surprisingly enough, the writer had defined a similar type before Keslin's data became available. According to Keslin, Madison Plain is similar to Madison Cord Impressed except it lacks decoration on the exterior surface and the "lip and rim interior occasionally bear cord impressions or punctates (cord-wrapped stick, knot or loop)" (Keslin, 1957, Appendix B). The writer originally proposed a "Madison Plain" which bore no decoration either on the exterior or interior. The category of Madison Plain has been made to conform to Keslin's definition, with the frequencies of plain interiors and decorated interiors indicated on Table 9.

Zone	Category A. **Madison Plain**		Category B. * **Madison Cord Impressed**		Category C. Grit-tempered, smooth surface		Category D. **Leland Cord-marked**		Category E. * **Denzer Stamped**		Category F. **Baraboo Cord-marked**		Category G. **Baraboo Net-marked**		Category H. * Grit-tempered, smooth surface Dentate stamp decorated		Category I. * Grit-tempered, smooth surface Dentate stamp decorated		Category J. Unclassified		Totals	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	16)	24.6	30)	46.2	2)	3.1	3)	4.6	3)	4.6	1)	1.5	1)	1.5	1)	1.5	1)	1.5	7)	10.8	65)	99.9
2	22)	22.2	38)	39.2	3)	3.1	11)	11.3	5)	5.2	7)	7.2	3)	3.1	1)	1.0	2)	2.1	5)	5.2	97)	100.0
3	24)	17.4	38)	27.5	3)	2.2	16)	11.6	18)	13.0	11)	8.0	8)	5.8	6)	4.3	1)	0.7	13)	9.4	138)	99.9
4	9)	10.5	8)	9.3	1)	1.2			40)	46.5	12)	14.0	7)	8.1	2)	2.3	5)	5.8	2)	2.3	86)	100.0
5			3)	11.5			2)	7.7	10)	38.5	4)	15.4	3)	11.5	3)	11.5			1)	3.8	26)	99.9
6	1)	25.0					1)	25.0			1)	25.0	1)	25.0							4)	100.0
Tot.	72		117		9		33		76		36		23		13		9		28		416	

TABLE 8. Frequency of Rimsherds, Durst Rockshelter, Sk2
*** Includes decorated sherds from near rim.**

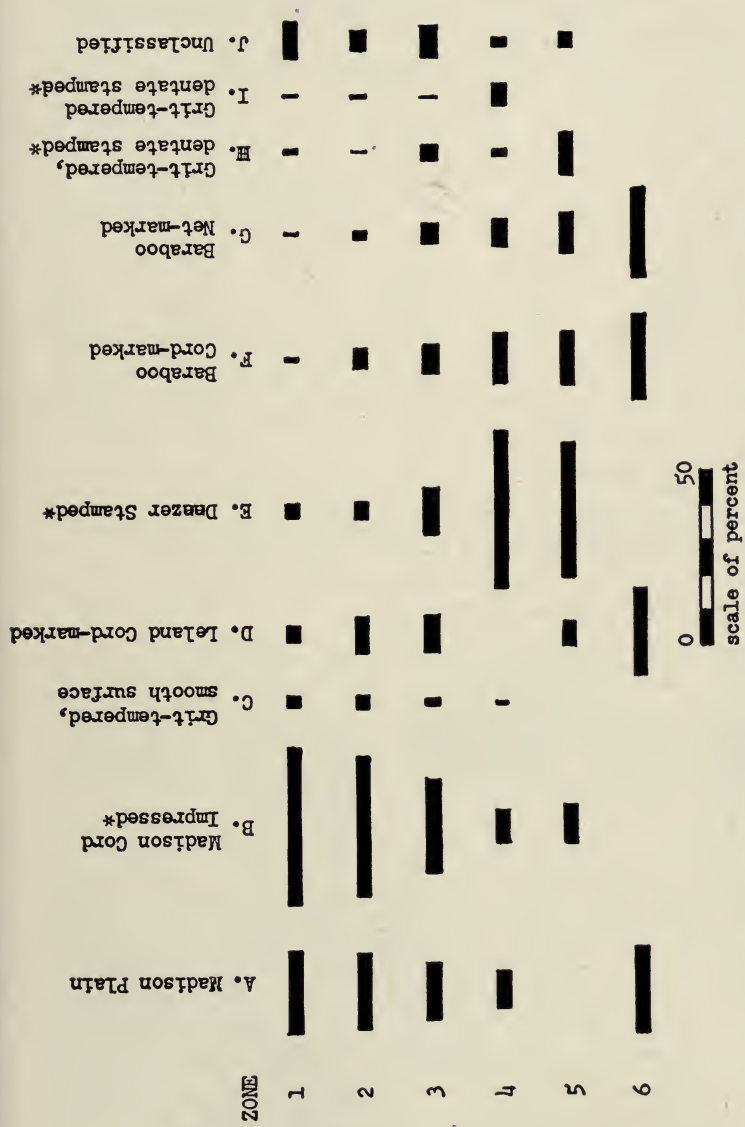


Fig. 21. Percentage Frequency of Rimsherds, Durst Rockshelter, Sk2.
* These categories include decorated sherds from near rim.

Madison Plain

PASTE:

Method of Manufacture: Probably the same as that of Madison Cord Impressed.

Tempering: Same as that of Madison Cord Impressed.

Texture: Compact.

Hardness: 2.5 to 3.5 (Moh's scale).

Color: Same as that of Madison Cord Impressed.

SURFACE FINISH: Same as that of Madison Cord Impressed.

DECORATION: The distinguishing characteristics of this type is that the exterior surface of the vessel bears absolutely no decoration. However, the lip and rim interior occasionally bear cord impressions or punctates (cord-wrapped stick, knot or loop).

FORM: Lip: Same as Madison Cord Impressed.

Rim: Same as Madison Cord Impressed.

Body: Probably similar to Madison Cord Impressed.

Dimensions: The range in thickness of rim sherds is 3 to 9 mm. with an average of 5.4 mm.

DISTRIBUTION: Primarily central and southern Wisconsin and portions of adjacent states.

CHRONOLOGICAL POSITION: Type appears to have begun in the Middle Woodland Period and continues to the Late Woodland Period.

SYNONYMY: Effigy Mound type of Lake Michigan ware.

Category B. (119 sherds) **Madison Cord Impressed.** (Figs. 24-29). This pottery type was proposed by David A. Baerreis at a pottery conference of the Wisconsin Archaeological Survey held in Madison on November 15, 1952. Since this type of pottery at the Durst site conforms to Baerreis's original description, the type description below is that distributed at the pottery conference. Subsequent uses of this type name have been added under the Bibliography. Table 9 gives the frequencies of variation in technique and area of decoration of this type at the Durst site.

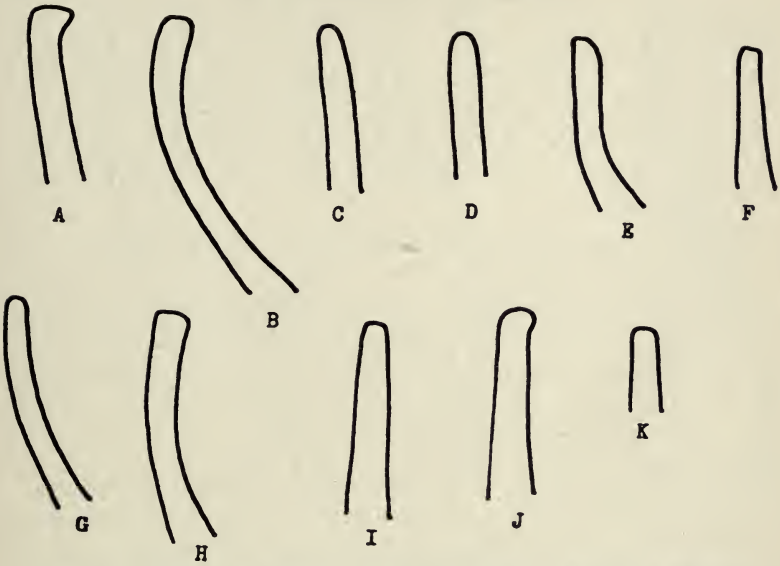


Fig. 22. Profiles of Madison Plain Rimsherds shown in Fig. 23. Interior surfaces at left. 4/5 scale.

Fig. 23. Madison Plain Rimsherds, Durst Rockshelter, Sk2.

Madison Cord Impressed

PASTE:

Method of manufacture: (not noted in original definition but discussed in papers listed in bibliography of type).

Tempering: Fine, crushed grit. Occasional particles range up to 5 mm. in size but the average piece is below one millimeter.

Texture: Compact. Frequently slightly sandy surfaces.

Hardness: 2.5 - 3.5.

Color: Surface colors are red or reddish brown with some dark fire blooms, with occasionally a light or dark gray. Body area tends to be smoke blackened. The pottery is well fired and the surface colors tend to continue without variation through the interior.

SURFACE FINISH: The body area is covered with fine cord-wrapped paddle impressions which may begin below a smoothed zone on which twisted cord imprints are applied or may cover the entire exterior surface.

DECORATION: The decoration consists of sharp, clear impressions of a twisted cord. The imprints occur as a horizontal band about the upper section of the exterior rim and frequently, in addition, as vertical or diagonal impressions on the interior of the rim which may extend over the lip. The horizontal impressions on the exterior may be bordered by short vertical imprints. Alternative decorative forms consist of a vertical row of short horizontal imprints and a band of parallel diagonal impressions.

FORM: Rim: The rim proper is vertical, slanting outward at its lower portion at about a forty-five degree angle to form a distinct shoulder area.

Lip: Flat or gently rounded with occasionally a slight outward roll.

Body: The body of the jars tends to be globular with a marked shoulder area and rounded base.

Size: The range in wall thickness is 3 to 8 mm., with an average thickness of 5.2 mm.

BIBLIOGRAPHY: Baerreis, 1953; Wittry and Bruder, 1955; Dietz, Baerreis, Nero, Cutler, 1956; Keslin, 1957.

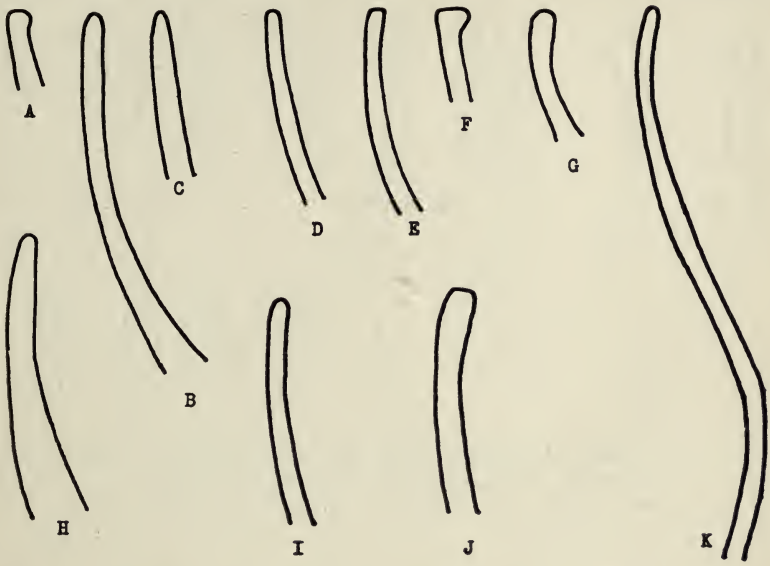


Fig. 24. Profiles of Madison Cord Impressed Rimshreds shown in Fig. 25. Interior surfaces at left. ⅔ scale.

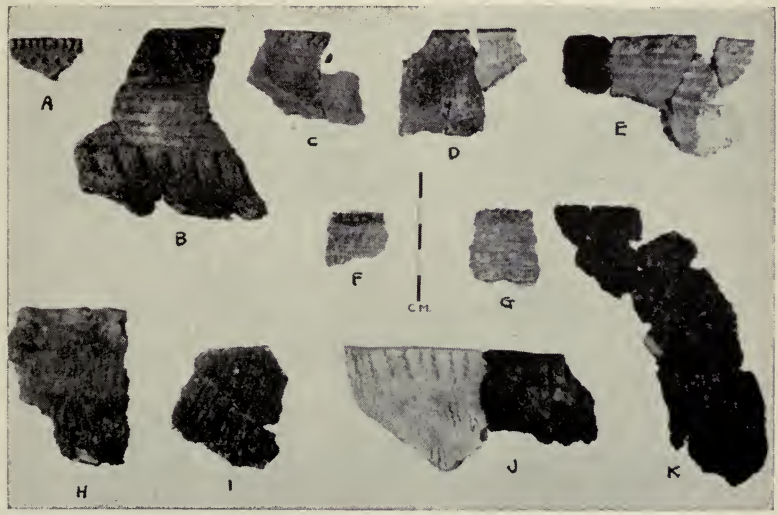


Fig. 25. Madison Cord Impressed Rimsherds, Durst Rockshelter, Sk2.

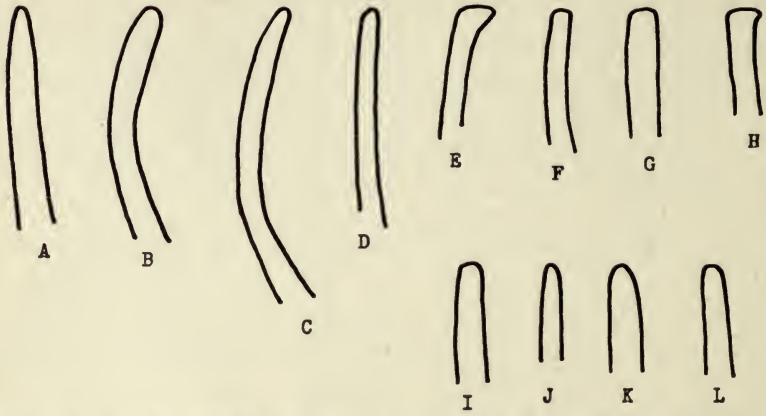


Fig. 26. Profiles of Madison Cord Impressed Rimsherds shown in Fig. 27. Interior surfaces at left. 7/10 scale.

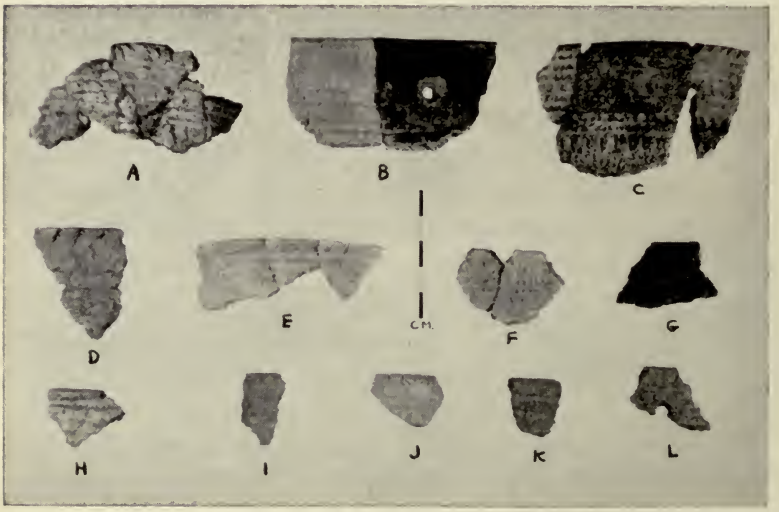


Fig. 27. Madison Cord Impressed Rimsherds, Durst Rockshelter, Sk2.

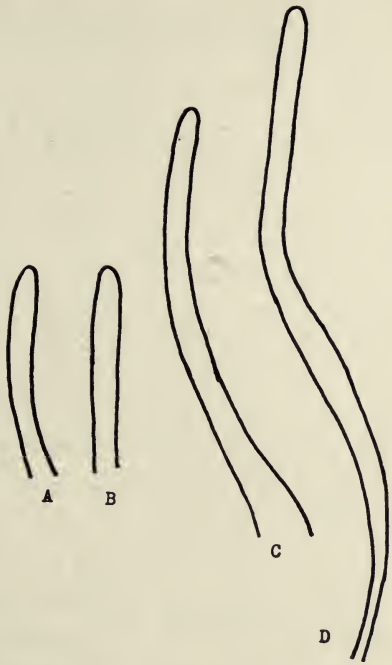


Fig. 28. Profiles of Madison Cord Impressed Rimsherds shown in Fig. 29. Interior surfaces at left. ⅔ scale.

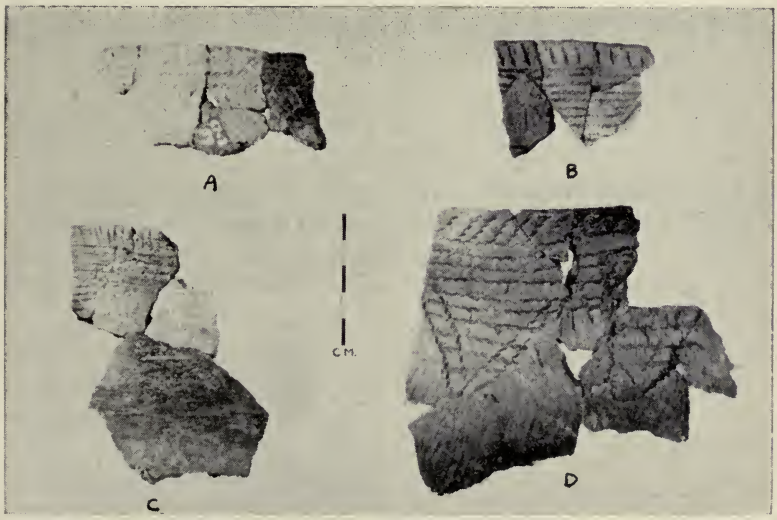


Fig. 29. Madison Cord Impressed Rimsherds, Durst Rockshelter, Sk2.

	Madison Plain				Madison Cord Impressed											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Zone	No Decoration	Lip decoration only	Interior rim decoration only	Total Madison Plain	Vertical or diagonal cord impressions on exterior rim only	Horizontal cord impressions on exterior rim only	Vertical or diagonal cord impressions on exterior and interior rim	Vertical or diagonal cord impressions on interior rim, horizontal cord impressions on exterior rim	Vertical or diagonal cord impressions on interior rim, horizontal cord impressions on exterior rim, lip decorated.	Vertical or diagonal cord impressions on interior rim, punctates only on exterior rim	Vertical or diagonal cord impressions on interior rim, "ladder" cord impressions on exterior rim	Vertical or diagonal cord impressions on interior rim, horizontal and pendant triangle cord, imp. on exterior rim	Crossed diagonal cord impressions on exterior surface	Total Madison Cord Impressed	Grand total, Madison Plain and Madison Cord Impressed
1	10		6	16	2	4	4	12	3			5		30	46
2	19	1	2	22	1	6	1	13	3		1	9	4	38	60
3	21	1	2	24	2	5	2	11	2	3	3	6	4	38	62
4	6		3	9	1			4			1	1	1	8	17
5						1		2						3	3
6			1	1											1
Tot	56	2	14	72	6	16	7	42	8	3	5	21	9	117	189

Table 9. Frequency of techniques and areas of decoration on Madison Plain and Madison Cord Impressed Rimsherds, Durst Rockshelter, Sk2.

DISTRIBUTION OF TYPE: Primarily central and southern Wisconsin and portions of adjacent states.

CHRONOLOGICAL POSITION: Type begins in Middle Woodland Period. Upper limits not yet determined.

SYNONYMY: Effigy Mound type of Lake Michigan ware.

Category C. (9 sherds) Grit-tempered, smoothed surface. These sherds represent several vessels. Their sizes are so small that nothing beyond a few indications of vertical rims can be said of vessel form. All of the lips are rounded. There is no decoration. Thickness ranges from 5 to 8 mm., averages 5.9 mm. Some of these rims may be a smoothed variant of Madison Plain, but since it is not known whether or not the bodies were also smoothed they are put in a separate category.

Category D. (33 sherds) **Leland Cord-marked** (Figs. 30, 31).

PASTE:

Method of Manufacture:

Tempering: Fine crushed grit, although larger pieces may range up to 5 mm.

Texture: Compact.

Hardness:

Color: Surface colors are reddish brown to gray. Cores and interiors tend to be same color as surface. Fire clouds rare.

SURFACE FINISH: Exterior surface is covered with cord-wrapped paddle impressions. The cords are tightly twisted and rather widely spaced on the paddle or dowel implement. Neck may be smoothed and body may be given a rough smoothing over the cord-markings. One rimsherd has a brushed surface treatment.

DECORATION: The only decoration consists of stamped impressions on the lip or upper rim made with a cord-wrapped stick or with a plain edge, usually held diagonally to the lip, less frequently, perpendicular to it.

FORM: Rim: The rim is vertical with a tendency for some sherds to have an inner channel.

Lip: Gently rounded or squared, rarely beveled.

Body: The rimsherds indicate broad shoulders and a globu-

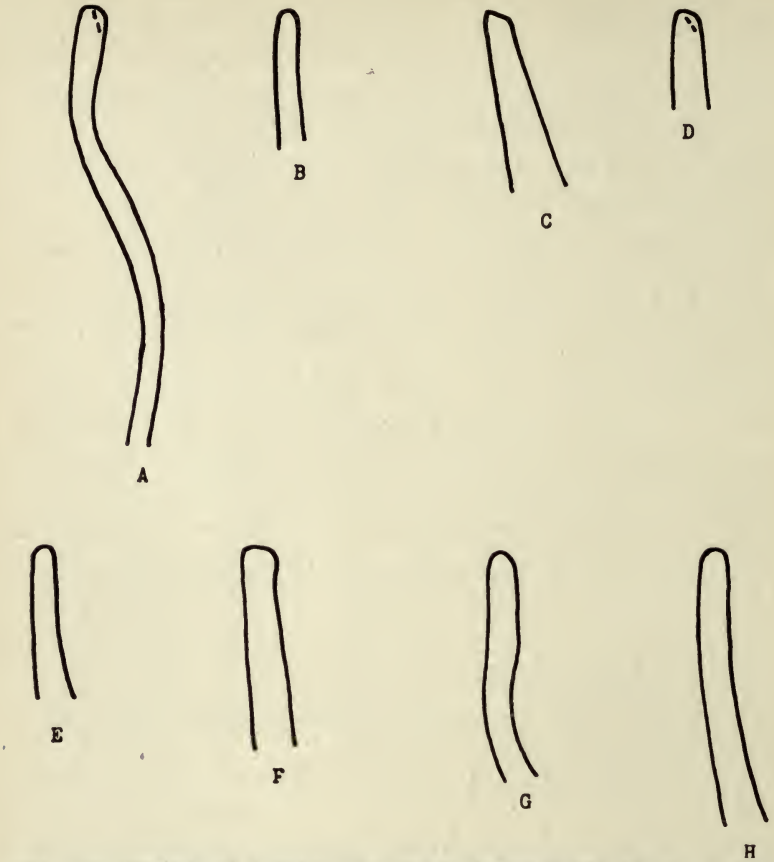


Fig. 30. Profiles of Leland Cord-marked Rimsherds shown in Fig. 31. Interior surfaces at left. ⅝ scale.

Fig. 31. Leland Cord-marked Rimsherds, Durst Rockshelter, Sk2.

lar vessel shape. Base is unkown, probably sub-conoidal or rounded.

Size: Thickness of rimsherds ranges from 5-9 mm., averages 6.4 mm.

BIBLIOGRAPHY:

DISTRIBUTION OF TYPE:

CHRONOLOGICAL POSITION: Middle Woodland.

SYNONYMY: Resembles Weaver ware of Illinois.

Category E. (76 sherds) **Denzer Stamped** (Figs. 32, 33).

PASTE:

Method of Manufacture:

Tempering: Crushed grit, medium size, 1 to 5 mm., but mostly at lower end of range.

Texture: Compact, slight tendency for sherds to exfoliate.

Hardness:

Color: Surface colors are light tan to reddish brown. Color tends to be the same in the core and on the interior surface, but may also grade to a darker shade of the surface color or gray on the interior side.

SURFACE FINISH: Exterior surface is cord-marked over entire body but neck may be smoothed.

DECORATION: Cord-wrapped stick and cord-wrapped paddle edge impressions, nodes and punctates. The cord-wrapped stick impressions are sharp and placed vertically or slightly diagionally on the interior rim; horizontally or vertically on the exterior rim; also occur as bands of short parellel impressions. Nodes or punctates occur in single bands around the neck 15 to 20 mm. below lip, 15 to 20 mm. apart. Neck surface may be stamped with cord-wrapped paddle edge in parallel horizontal bands.

FORM: Rim: Vertical or slants slightly inward.

Lip: Gently rounded or squared.

Body:

Size: Thickness of rimsherds range from 6 to 10 mm., averages 8.7 mm.

BIBLIOGRAPHY:

DISTRIBUTION:

CHRONOLOGICAL POSITION: Middle Woodland.

SYNONYMY: Resembles Havana ware of Illinois.

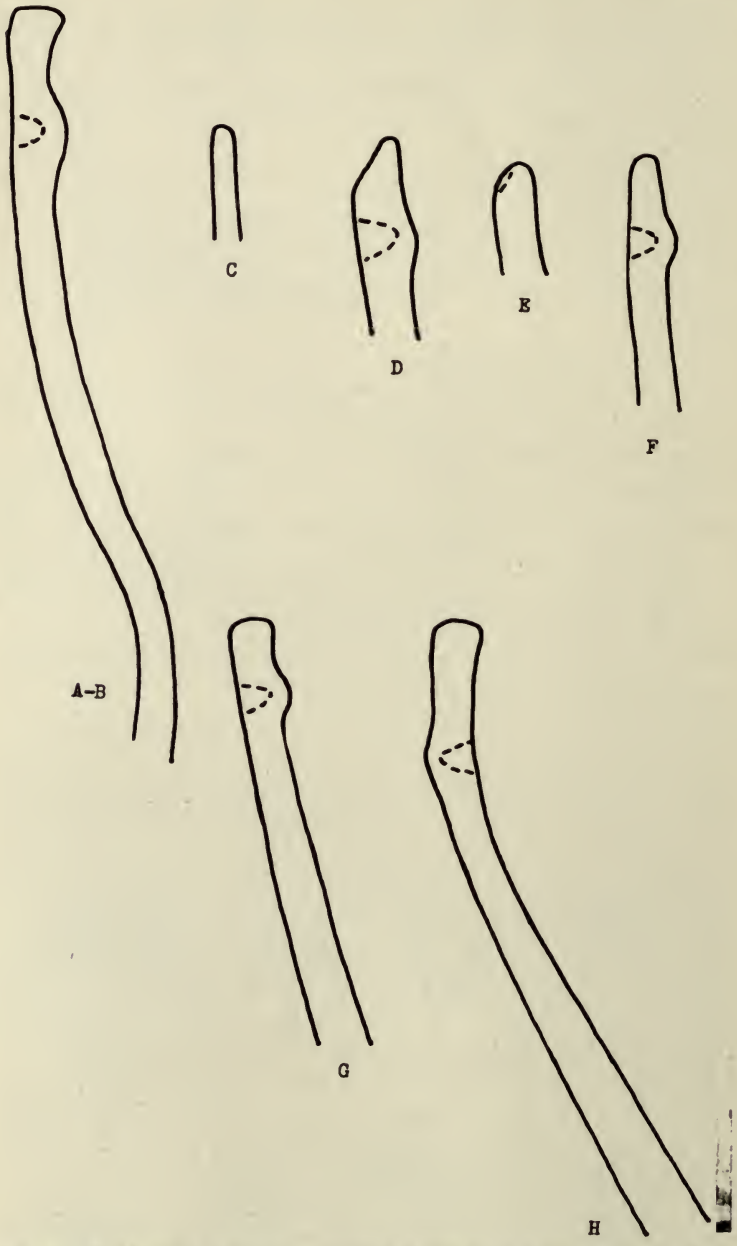


Fig. 32. Profiles of Denzer Stamped Rimsherds shown in Fig. 33. Interior surface at left. ¾ scale

Category F. (36 sherds) **Baraboo Cord-marked** (Figs. 34, 35).

PASTE:

Method of Manufacture:

Tempering: Sparse to moderate amount of finely crushed shell.

Texture: Compact.

Hardness: 2 to 3.5, averages about 3.

Color: Red exteriors to red or gray interiors. Fire clouds rare.

SURFACE FINISH: Cord-wrapped paddle impression on entire surface. Neck area may be smoothed or partially smoothed. The cords are widely spaced on paddle.

DECORATION: Rare, limited at the Durst site to nodes 20 mm. apart, 16 mm. below lip; and a crimping of the lip to form a (horizontally) sinuous outline.

FORM: Rim: The rim slants slightly inward.

Lip: Smoothed to a squared, slightly beveled, or gently rounded profile. Tendency toward a very thin T-shaped outline.

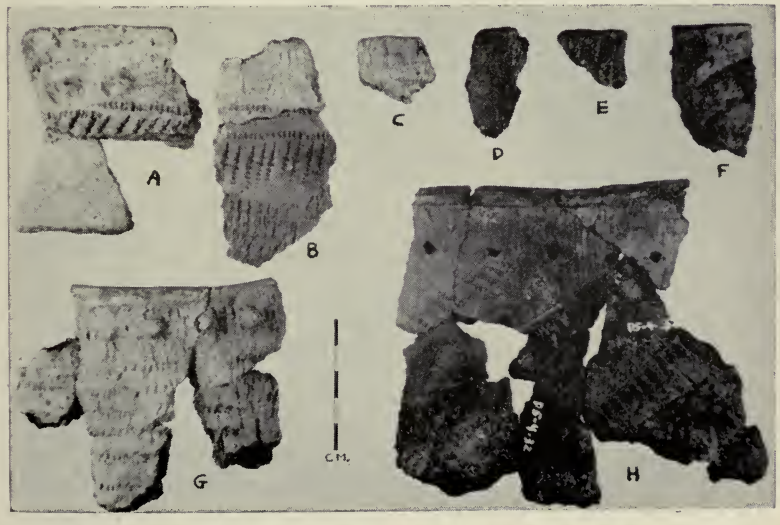


Fig. 33. Denzer Stamped Rimsherds, Durst Rockshelter, Sk2.

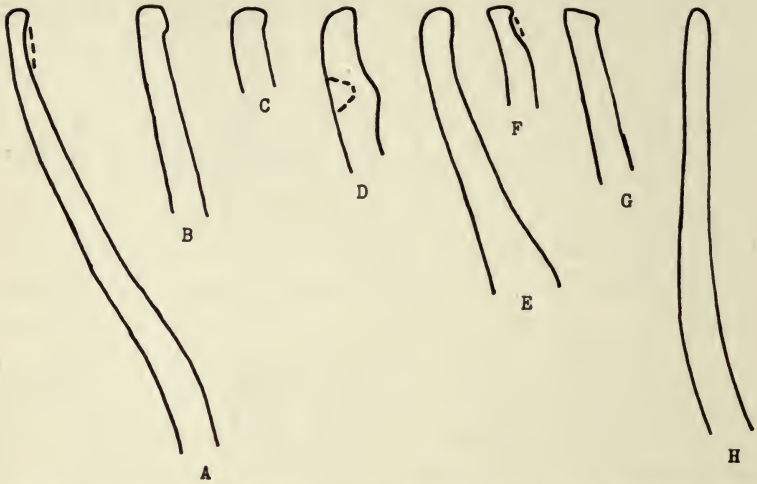


Fig. 34. Profiles of Baraboo Cord-marked (A-E) and Baraboo Net-marked (F-H) shown in Fig. 35. Interior surfaces at left. 7/10 scale.

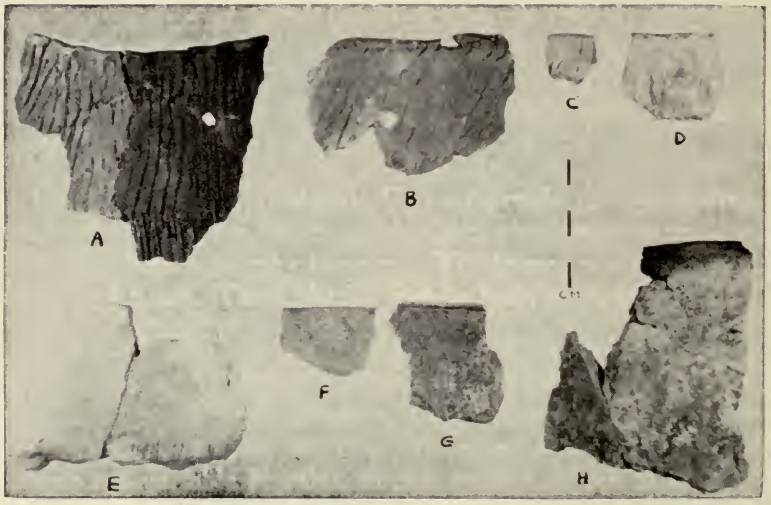


Fig. 35. Baraboo Cord-marked (A-E) and Baraboo Net-marked (F-H) Rimsherds, Durst Rockshelter, Sk2.

Body: Slightly elongated body with weak shoulders indicated. Restored vessels from the Cooper Rockshelter have a truncated-egg-shaped body.

BIBLIOGRAPHY:

DISTRIBUTION:

CHRONOLOGICAL POSITION:

SYNONYMY:

Category G. (23 sherds) **Baraboo Net-marked** (Figs. 34, 35).

PASTE: Same as Baraboo Cord-marked.

SURFACE FINISH: Entire exterior body surface covered with haphazardly placed net-marks frequently superimposed over each other. Mesh size on Fig. 35, F, H, 6.5 mm.; on G, 5 mm. square. Neck may be smoothed.

DECORATION: Limited at the Durst site to lip crimping.

FORM: Rim: Slants slightly inward.

Lip: Smoothed to a gently rounded, beveled, or squared profile.

Body: Weak shoulders indicated. (Almost complete pots of this type in Milwaukee Public Museum collections indicate a truncated-egg-shaped body).

Size: Thickness ranges from 4 to 8 mm., averages 6.0 mm.

BIBLIOGRAPHY:

DISTRIBUTION: Known from Sauk County rockshelters and from sites in Columbia County.

CHRONOLOGICAL POSITION:

SYNONYMY:

Category H. (13 sherds) (Figs. 36, 37). Grit-tempered, smooth surface. These sherds are apparently from a single vessel. Decoration consists of a dentate stamp on lip and upper portion of the body in a geometric design. There is a single row of small punctates, 18 mm. below the lip. The rim is vertical and the lip squared. Body shape is elongated with shoulders weak or absent. Base unknown.

Category I. (9 sherds) (Figs. 36, 37). Grit-tempered, smooth surface. These sherds apparently represent a single vessel. The decoration consists of 2 rows of short vertical

Fig. 36. Profiles of Rimsherd Categories H (A-C) and I (D, E) shown in Fig. 37. Interior surfaces at left. ½ scale.

Fig. 37. Rimsherd Categories H (A-C) and I (D, E), Durst Rockshelter, Sk2.

dentate stamp impressions, one pendant from the rounded lip, the other about 31 mm. below the lip. Vessel shape unknown, but weak shoulders are indicated.

Category J. (28 sherds) Unclassified. (Figs. 38, 39). Thirteen vessels are represented, one rimsherd from each of which is illustrated in the figures. The following descriptions are keyed to the illustration.

A. Grit-tempered, smooth surface. Madison Cord Impressed design, except executed with a cord-wrapped stick rather than single cords. 3 sherds: 1 from Zone 1, 2 from Zone 3.

B. Grit-tempered, plain rim, surface modified with edge of cord-wrapped paddle. 4 sherds, all from Zone 3.

C. Grit-tempered, plain rim. Surface cord-marked. Interior rim bears cord-wrapped stick impressions (Fig. 39, D). 4 sherds, all from Zone 3.

E. Grit-tempered, cord-marked surface. Collared rim with notched lip. 4 sherds, all from Zone 1.

F. Grit-tempered, cord-marked surface. Fillet added to trim. Lip notched. Inner bears single cord impressions (Fig. 39, G). This sherd belongs to the type defined by Keslin (1957) as Hahn Cord Impressed, 3 sherds, from Zones 1, 2, 3.

H. Grit-tempered, smooth, imperfectly polished surface. Incised geometric design with punctates. 2 sherds from Zone 3.

I. Grit-tempered, smooth surface. Plain with flattened lip. 1 sherd from Zone 3.

J. Grit-tempered, cord-marked surface. Fillet added to rim. single cord decoration. Belongs in Hahn Cord Impressed. 1 sherd from Zone 1.

K. Grit-tempered, cord-marked surface. Fillet added to rim. Single cord decoration. Belongs in Hahn Cord Impressed. 1 sherd from Zone 4.

L. Grit-tempered, smoothed-over-net marked body, crimped rim. Resembles Baraboo Net-marked, except grit-tempered. 1 sherd, Zone 2.

M. Grit-tempered, "brushed" surface, rounded lip, otherwise plain. 1 sherd, Zone 2.

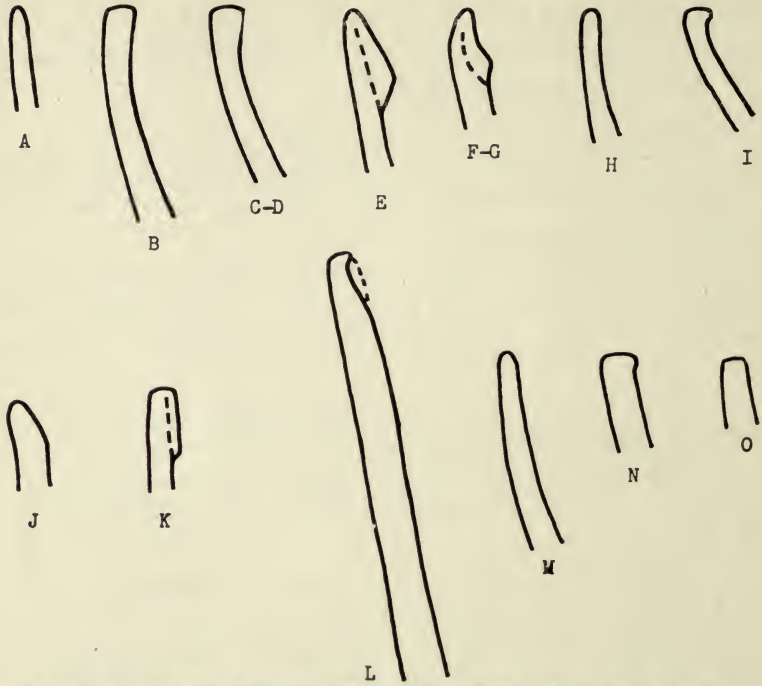


Fig. 38. Profiles of Unclassified Rimsherds shown in Fig. 39. Interior surfaces at left. 7/10 scale.

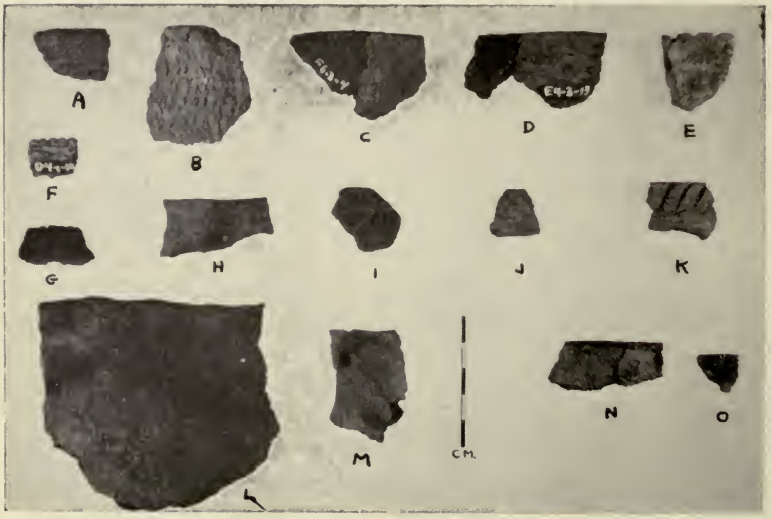


Fig. 39. Unclassified Rimsherds, Durst Rockshelter, Sk2.

N. Grit-tempered, "brushed" surface, squared lip, otherwise plain. 1 sherd from Zone 2.

O. Grit-tempered, smoothed surface, plain except for plain stamp on inner rim (inner surface illustrated). 1 sherd, Zone 4.

Summary and Interpretation

Although a medium-sized rockshelter with a deposit only a few feet in thickness, this site has produced a remarkable amount of materials and information. The diversity of artifact forms, both non-ceramic and ceramic, indicates that several cultural groups had occupied the site. The artifact types and their different depth distributions are strong evidence, if not proof, that these occupations were sequential and took place over a considerable period of time.

The interpretation of this site, of course, is highly dependent on the excavation procedure and methods of analysis. In the upper portions of the deposit, where natural stratification was absent, it was necessary to excavate by arbitrary units of depth. These, and the deeper natural strata were subsequently grouped into zones, numbered from 1, the uppermost, to 6, the lowermost. Except for artifacts which had been disturbed from their original position, the artifacts present in a given zone are considered to have been more-or-less in contemporary use during the formation of that zone at the site. This does not mean necessarily, that artifacts from the same zone were in cultural assocation (i. e., that they are traits of the same cultural complex).

When the depth distributions of two or more artifacts types are the same, or nearly the same, at a site such as this, contemporaneousness is indicated, but cultural association can only be determined by the discovery of the same types (or traits) in repeated association at several different sites where similar or other indications of contemporary use are evident.

For the most part, the artifact depth distributions, as shown on the various frequency tables and diagrams, speak for themselves. Table 2 and Fig. 8 show excellent relative stratigraphy in projectile point types, while Table 3 shows a sharp break in

size between the earlier types (A, B, and C) and the later types (E, F, and G). Relative distributions of other non-ceramic artifacts can be readily seen on Table 5.

In the analysis of pottery, it was found necessary to treat body- and rimsherds separately. This was not done as a substitute for the usual analysis according to pottery types. Where warranted, body- and rimsherd categories were dealt with as types; otherwise as categories of similar sherds. Here, also, the relative temporal position of the various types (or categories) can best be observed on the frequency tables and diagrams. Table 8 and Fig. 21 (frequencies of rimsherds) contain the more important information while the data of Table 6 and Fig. 20 (frequency of bodysherds) provide supplementary information. Since the pottery present in Zone 6 is undoubtedly intrusive, it should be disregarded in the interpretation of the frequency tables and graphs.

A relatively early pottery type at this site, probably the earliest, is Denzer Stamped. Roughly contemporary with it, or slightly later in time, are the two types of Baraboo Ware, Baraboo Net-marked and Baraboo Cord-marked. The occurrence of this shell-tempered ware in such an early context is, to say the least, perplexing. Except for tempering material, however, the other aspects of the ware are Woodland in character. There are no clear indications of associations with other artifact types, so until further work establishes a context for this pottery, no additional interpretations concerning it can be drawn.

It is interesting to note that the indicated chronological sequence of 1) Denzer Stamped, 2) Leland Cord-marked, and 3) Madison Plain and Madison Cord Impressed is the same as the sequence of related pottery in the Illinois River Valley — 1) Havana Ware, 2) Weaver Ware, and 3) Canton Ware (Fowler 1955). These types and other pottery categories at this site are typically Middle Woodland and would therefore belong to this temporal period. Five rimsherds, representing 3 vessels of the Hahn Cord Impressed type, were found in Zone 1, and belong to the Late Woodland Period.

A tendency for vessel walls of grit-tempered, cord-marked pottery to be made thinner as time passed is indicated on Table

7. Bodysherds of Zones 4 and 5 have a mean thickness 1 mm. greater than the means of Zones 1-3. This is undoubtedly due to the earlier occurrence of Denzer Stamped, a thicker ware than the later pottery, and the fact that undecorated grit-tempered, cord-marked bodysherds representing several rim types and categories were lumped into this category.

The cultural history of this site can only be interpreted through the artifacts present and their distribution in the somewhat arbitrarily defined zones. Zone 6, the lowermost or earliest zone at this site, is clearly preceramic. The 48 potsherds found in it (1.7% of the site's total number) obviously were present as a result of disturbance in the deposit after the site had been occupied by groups possessing pottery. The predominate type of projectile point found in this zone is Raddatz Side-notched. The over-all similarity of this type with the chipped stone projectile points of the Old Copper complex (Wittry and Ritzenthaler, 1956) suggests a placement in the Archaic Period for this zone. Several other artifact forms, because of their preponderate occurrence in Zone 6, also appear to date from this period. "Small" scrapers, small ovate knives, choppers and gravers certainly date from this period, if not earlier. Flake knives appear, but are shown to survive into later horizons. The rarity of bone or shell artifacts in Zone 6 is probably due to the poor conditions of preservation in the soil.

Whereas Zone 6 was well defined in terms of natural stratigraphy, the 5 zones above it were arbitrarily set as a thickness of four inches each. Artifacts characteristic of the Early Woodland Period as it has been defined in the Eastern United States are completely lacking at this site. In view of this and the paucity of Early Woodland artifacts at the other rockshelters investigated, as well as the state as a whole, it would seem that the Zone 5 period of deposition represents a change from Archaic to Middle Woodland times and contains a mixture of artifacts from both periods. The only distinctive artifact type present, in quantity, was the Durst Stemmed type of projectile point which is interpreted as being primarily of he Late Archaic Period at this site, perhaps surviving into later times in subdued importance.

Zones 1-4 contain almost exclusively Middle Woodland materials. There were a few sherds of Late Woodland pottery at the very top of the deposit. The Madison Ware pottery is typical of the Late Middle Woodland period and is preceeded only slightly in time by the Leland Cord-marked type.

The small triangular projectile points of these zones, particularly the side-notched type, have long been considered as characteristic traits of the Mississippi culture pattern. Their presence in relatively great numbers (more than any other type at the site) poses some interesting problems, particularly because of the total absence of Mississippi pottery. Two interpretations immediately suggest themselves: 1) the small points were left at the site by Mississippi cultures during brief hunting trips, or 2) they were left by Woodland culture groups (who may or may not have adopted this point type by contact with Mississippi peoples).

The distribution patterns of Madison ware pottery and the small projectile points are almost identical and strongly suggests that they were contemporary. Madison ware is, by far, the most prevalent pottery of the upper zones and the small point types (E, F) and G) are virtually the only point types for the same levels. Rather than conclude that Mississippi cultures occupied the site and left points but no pottery (forcing the conclusion that Woodland peoples left Madison ware pottery but no points), it seems logical that the two were left by the same cultural group and, therefore, should be considered as having been in cultural association. A similar conclusion was reached from the study of a different body of data by Keslin (1957).

Thus, the major occupations of this site took place during the Archaic and Middle Woodland periods. During the latter, the introduction of domesticated plants caused a basic change in the economy. This change seems to have caused a change in the use of rockshelters as habitation sites. The change can best be demonstrated through the use of "artifact indices" which assigns a stable importance to a certain artifact type or trait while other artifact types or traits are expressed as a percentage of this assumed "stable" type.

Zone	Scrapers		Drills		Knives		Choppers		Gravers		Chisel		Utilized Flakes		Unidentified Fragments		Unmodified Flakes		Projectile Points (total)
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No..	%	No.	%	No.
1	6)	10.5	2)	3.5	6)	10.5							15)	26.3	18)	31.6	571)	1017.5	57
2	6)	10.4	3)	5.2	10)	17.2					1)	1.7	15)	25.9	18)	31.0	496)	855.2	58
3	3)	6.9	3)	6.9	8)	18.6							11)	25.8	27)	62.8	466)	1083.7	43
4	5)	13.2	1)	2.6	9)	23.7			2)	5.3			7)	18.4	17)	44.7	420)	1105.3	38
5	6)	13.0	1)	2.2	8)	17.4	1)	2.2	1)	2.2			20)	43.5	30)	65.2	839)	1823.9	46
6	31)	75.6			20)	48.8	8)	19.5	3)	7.3			37)	90.2	59)	143.9	2265)	5524.4	41
Tot.	57		10		61		9		6		1		105		169		5057		283

Table 10. Artifact Indices of Chipped-stone Categories, Durst Rockshelter, Sk2.

Projectile points have been used in the past as the stable trait (Baerreis 1951, Wittry 1952). These are present in roughly the same quantity in each of the zones at this site. Table 10 presents the indices of other chipped-stone artifact catgeories in relation to the number of points from each zone. The table clearly shows that the Archaic zone (Zone 6) contains both numerically and proportionately much larger numbers of scrapers, knives, utilized flakes, chipped-stone fragments, and unmodified flakes. Choppers appear to be an Archaic trait, not represented in the Woodland zones, while the reverse is true for the chipped-stone chisel. Gravers and drills are not sufficiently numerous to formulate definite conclusions. It might be noted that, on the basis of numerical occurrence, gravers are early at the site, while the absence of drills from the Archaic zone may represent a functional difference.

It would not be fair to construct indices for bone and shell artifacts because of the poor soil conditions of Zone 6 compared to that of Zones 1-5. The acid conditions of Zone 6 may also have caused the disintegration of sandstone implements such as abraders. Although few in number, hammerstones are most abundant in the Archaic zone.

The chipped-stone artifact indices of this site clearly show that, compared to the later, Woodland occupation, the Archaic peoples spent much more time in butchering (knives), skin preparation (scrapers), flint knapping (unmodified flakes and fragmentary implements) and in activities which resulted in utilized flakes.

Of course, only those activities which are reflected by nonperishable artifacts left in the soil can be determined. A great deal of the past human activity at the site (e. g., work in wood and vegetable fiber, sleeping, singing, etc.) has left no record in the soil. Nevertheless, the evidence does show that the Archaic peoples made a greater use of this site as a habitation than did the Middle Woodland peoples. No doubt, the latter, under their mixed economy, performed much of the activities mentioned above at their village and camp sites associated with their crops and used the rockshelter primarily as a seasonal camp for hunting and collecting trips.

III. THE KNOOP ROCKSHELTER, Sk3

Location and Description

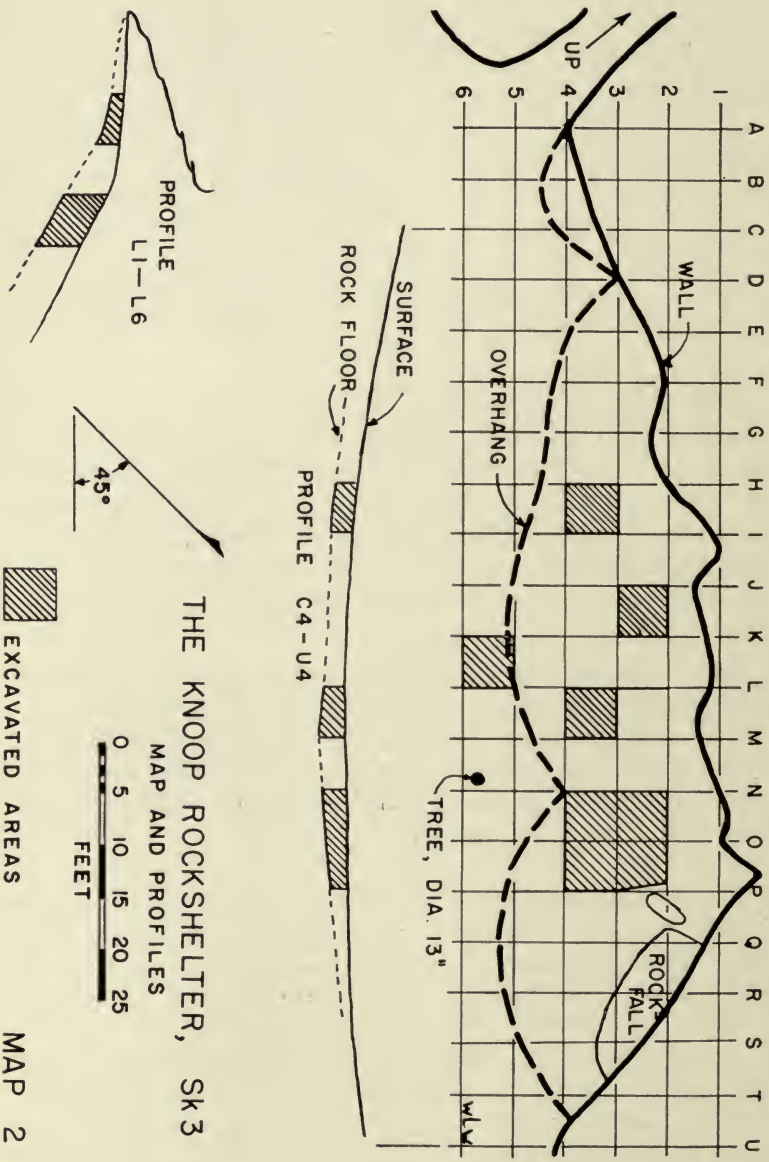
The Knoop rockshelter (Fig. 40) was eroded from that portion of the Cambrian sandstone which partially fills the Baraboo River valley between the North and South Ranges of the Baraboo quartzite. It, like the Durst site, faces approximately to the southeast and has a length of about 80 feet. The maximum amount of overhang is 20 feet and the height varies from 12 feet at the edge to nothing where the ceiling slants down to the level of the surface at the rear of the shelter. The site was brought to the writer's attention by Milton F. Hulburt of Reedsburg.

This shelter is one of four on the farm of Mr. Reuben L. Knoop. It and 2 adjacent shelters, one to the north and one to the south, are situated at the eastern end of a flat-topped spur of sandstone in the NE ¼, SW ¼, Sec. 6, T11N, R 6 E. A small stream, a few yards east of the three shelters, flows northward and enters the Baraboo River about 1000 feet from the site where the excavations described here were undertaken.

The fourth shelter is about ⅝ mile westsouthwest of the three, at the head of a small "box canyon" which opens directly on the Baraboo River. A few signs of prehistoric occupation were found but the deposit was so badly eroded by runoff water from the land above the overhang that excavations did not seem warranted.

The configuration of the rear wall of the Knoop shelter was such that at one point, in the vicinity of Square P1 (see Map 2), a "natural chimney" was formed which effectively carries away smoke from fires built in this square.

The surface of the deposit is about 1 foot higher in this square due to the accumulation of ash from the fires built there, both by the prehistoric Indians and modern picnicers. The rock walls of the "chimney" are smoke-blackened. Fragments of pop bottles and bottle caps were found on the surface and in the first 4-inch layer of the squares excavated.


A B C D E F G H I J K L M N O P Q R S T U
1 2 3 4 5 6
UP
WALL
OVERHANG
ROCK FALL
TREE, DIA. 13"
SURFACE
ROCK FLOOR
PROFILE C4 - U4
PROFILE L1 — L6
45°
EXCAVATED AREAS
THE KNOOP ROCKSHELTER, Sk3
MAP AND PROFILES
0 5 10 15 20 25
FEET

MAP 2

Excavation Procedure and Stratigraphy

The site was staked out in a 5-foot grid and the 8 squares excavated (shown on Map 2) were "taken down" to bedrock in arbitrary 4-inch levels, each parallel to the surface. In the 7 excavated squares located underneath the overhang there appeared near the surface a 0.1 to 0.2' foot layer of loose sand. Below that, to an average depth of 0.6 foot was a layer of moist compacted sand, light in color due to the presence of ash. At depths from 0.6 foot to bedrock, which was encountered at from 1 to 2 feet below the surface, was a layer of moist, brown sand.

Just outside the overhang, in Square L6, the deposit was deeper because of the steep slope of the rock floor. As shown in the profile (see Map 2), the surface of the deposit had a fairly uniform slope of 25° eastward before it leveled off near the banks of the creek. The deposit in this square was uniformly dark brown in color except for the darker humus layer near the surface. A change in consistency was noted in Level 7 (depth 24-28") where the sand was slightly cemented. The degree of cementation increased toward the bottom of the deposit. Bedrock was reached at 40" on the K5-L5 profile and 48" on the K6-L6 profile. Level 10, a full unit, and levels 11 and 12, wedge-shaped units on the southeastern edge of the square, contained only chips and animal bone fragments.

Excavations were conducted August 1-5, 1955, with James Porter and Joseph Lalor assisting the writer. Camp was set up on the flat topped spur, just above the shelter. At the southwestern end of the shelter a steep path led up to the top of the spur.

Although the Knoop rockshelter is located well within the border of the driftless area, it, unlike the other sites reported herein, was once submerged below the waters of a glacial lake. Its approximate altitude of 900 feet is well below the surface of Glacial Lake Baraboo which has been determined to have been about 960 feet from the elevations at which ice-rafted glacial boulders are found. This glacial lake was actually a bay of the much larger Glacial Lake Wisconsin which was formed when ice blocked the Devils Lake gorge of the

preglacial Wisconsin River during the Cary stage of the Wisconsin glaciation.

During their short existence, Glacial Lakes Wisconsin and Baraboo probably drained through the Black River to the Mississippi River. Except for the transporting of boulders by ice-rafting, the lakes had little effect on geologic history of the area. No evidence of water-laid sediments was found in the excavations conducted at the Knoop site. However, varied sediments were observed by the writer while test excavating at the base of Sheep Pasture Bluff in Juneau County. A theory which will be presented in greater detail in Chapter VI is that the floor deposits of the rockshelters investigated, whether in

Fig. 40. The Knoop Rockshelter, Sk3. Squares I4, M4, and L6 had been excavated when the picture was taken. The "natural chimney" is located just left of the rock in the left center of the picture.

the area of the extinct glacial lakes or elsewhere in the Driftless Area, were built up almost totally since the recession of the Cary ice from eastern Wisconsin.

Cultural Remains

The non-ceramic artifacts found at this site are shown in Fig. 41. Their dimensions and proveniences are listed in the accompanying key. Fourteen projectile points (A-N) were of the small triangular type. Other projectile points included 1 side-notched triangular point (O), 1 Durst Stemmed (P), 1 side-notched point with basal grinding that had been reworked into a drill (Q), 3 Monona Stemmed points (R-T), and 2 fragmentary specimens, apparently lanceolate in outline with concave bases (U, V).

Scrapers were represented by 2 end scrapers (A', B'), 1 flake scraper (C'), a concave edge scraper (D'), and 2 small scrapers of the type found in the lowest levels of the Durst Rockshelter (E', F').

Four items of miscellaneous chipped stone are the tip of a large blade (G'), a large quartzite knife fragment (H'), and 2 choppers (not illustrated; one of quartzite from Level 3 of I4 and one of chert from Level 3 of M4).

In addition to the sandstone abrader (K'), other stone articles were a fragment of the bit of a stone ax or celt (Level 3, M4) and a galena cube (Level 7, L6).

Bone articles include the 4 split bone awls (W-Z), and a canine tooth pendant (I') which has been ground flat on its two sides. Tips of antler flaking tools were found in the following units (Square and Level): O4-2, L6-3, 14-3, and P4-2. Fragments of turtle shell bowls came from P4-2, P3-3, I4-3, and M4-2.

The most interesting find at this site was the base of a copper projectile point (J'). It was found at a depth of 34" in Square L6 wedged in a crack in the bedrock. Unquestionably, it is of the Old Copper type I-G2 (Wittry 1951).

Ceramics

In general, the pottery from this site falls into the same categories as were present at the Durst site. The frequencies of

Fig. 41. Artifacts, Knoop Rockshelter, Sk4.

Key to Fig. 41. Artifacts, Knoop Rockshelter, Sk4.

	Material	Sq.	Level	Length	Width	Thickness
A. Triangular Point	chert	L6	3	(30)mm.	18 mm.	5 mm.
B. Triangular Point	chert	P4	1	30	19	4
C. Triangular Point	chert	P4	3	23	17	4
D. Triangular Point	chert	L6	3	19	—	4
E. Triangular Point	qtzite	O3	1	25	23	4
F. Triangular Point	qtzite	O3	2	34	16	4
G. Triangular Point	chert	O3	4	31	21	3
H. Triangular Point	qtzite	I 4	3	23	18	5
I. Triangular Point	chert	O3	1	25	11	5
J. Triangular Point	chert	M4	4	24	—	2
K. Triangular Point	chert	P3	2	—	15	4
L. Triangular Point	chert	P4	1	21	15	3
M. Triangular Point	qtzite	M4	2	18	16	5
N. Triangular Point	qtzite	L6	1	25	(24)	4
O. Side-notched tri. pt.	chert	P4	1	(32)	18	4
P. Durst Stemmed pt.	chert	I4	1	45	20	6
Q. Side-notched pt.	chert	K3	1&2	—	25	8
R. Monona Stemmed pt.	chert	P3	2	31	18	9
S. Monona Stemmed pt.	chert	L6	3	—	18	8
T. Monona Stemmed pt.	chert	L6	9	27	17	5
U. Concave base pt.	chert	O3	2	—	22	—
V. Concave base pt.	chert	L6	5	—	22	—
W. Awl	bone	L6	3	—	—	—
X. Awl	bone	M4	2	(67)	9	—
Y. Awl	bone	I4	3	81	8	—
Z. Awl	bone	M4	1	—	—	—
A' End scraper	chert	O3	1	21	19	8
B' End scraper	chert	L6	8	—	—	9
C' Flake scraper	chert	O4	2	27	15	4
D' Concave edge scraper	chert	M4	2	27	21	8

E' End Scraper	chert	I4	3	24	19	5
F' End scraper	chert	I4	3	32	—	11
G' Tip of blade	chert	K3	2	—	—	—
H' Knife	qtzite	M4	2	—	42	12
I' Pendant	tooth	I4	2	33	8	3
J' Base of Proj. pt.	copper	L6	9	—	—	3
K' Abrader	sandst.	L6	7	70	47	15

bodysherds are presented in Table 11. Ten of the Denzer Stamped sherds were found in a single square, K3, and their seemingly late appearance might be accounted for by disturbance since the deposit in this square was much thinner than in the other squares excavated. The Baraboo ware sherds show approximately the same depth distribution relative to Madison Cord Impressed as they did at the Durst site. The Madison Cord Impressed sherds should be presented in greater numbers because only the decorated bodysherds are tabulated separately, the undecorated bodysherds being thrown in with the more general category of "grit-tempered, cord-marked surface."

Representative rimsherds are shown in Figs. 42, 43. A pottery variety present at this site and not at the Durst site has a grit-tempered paste, cord-marked surface, and bears an incised design (Fig. 43, G). The 3 Leland Cord-marked rimsherds are decorated with a plain stamp.

Table 11. Frequency of Bodysherds, Knoop Rockshelter, Sk2.

Level	Grit-tempered, Cord-marked	Grit-tempered, smooth surface	Grit-tempered Cord-marked incised dec. *	**Madison Cord Impressed ***	**Baraboo Net-marked**	**Baraboo Cord-marked**	Grit-tempered net-marked	Shell-tempered smooth surface	**Denzer Stamped ***	Total
1	103	5	2	8	5		2	4	9	138
2	171	15	2	11	18	2	3	5	1	228
3	123	11	1	7	19	3	1	5	1	171
4	21	3	1	2	4			3		34
5	1									1
Total	419	34	6	28	46	5	6	17	11	572

* Only bodysherds bearing the decorative characteristics of these types are tabulated; other bodysherds of these types are in column of grit-tempered, cord-marked surface.

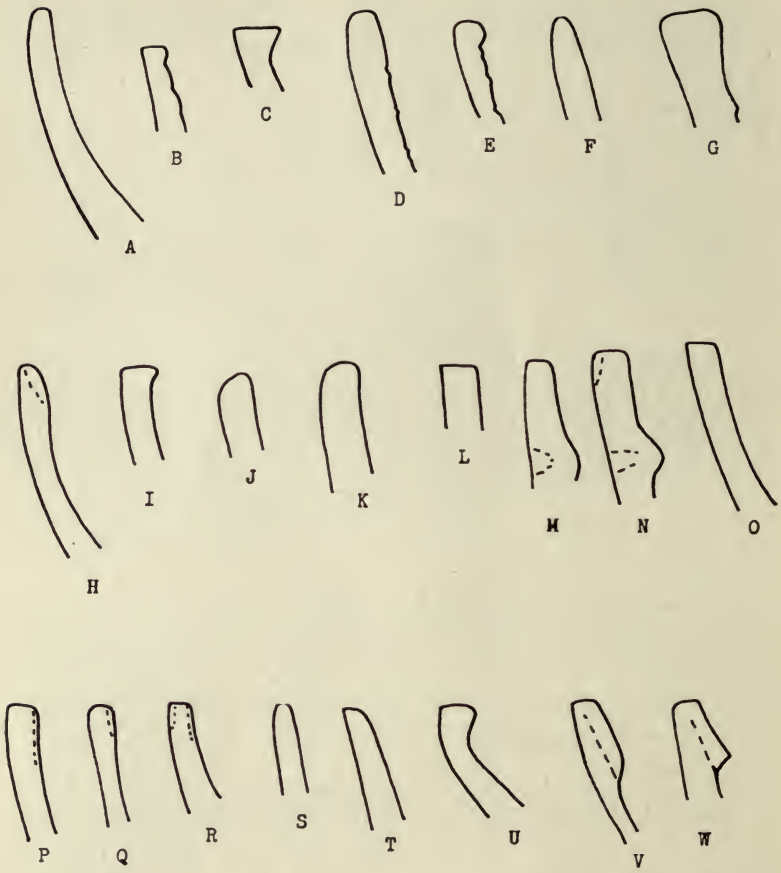


Fig. 42. Profiles of Rimsherds shown in Fig. 43. Interior surfaces at left. 7/10 scale.

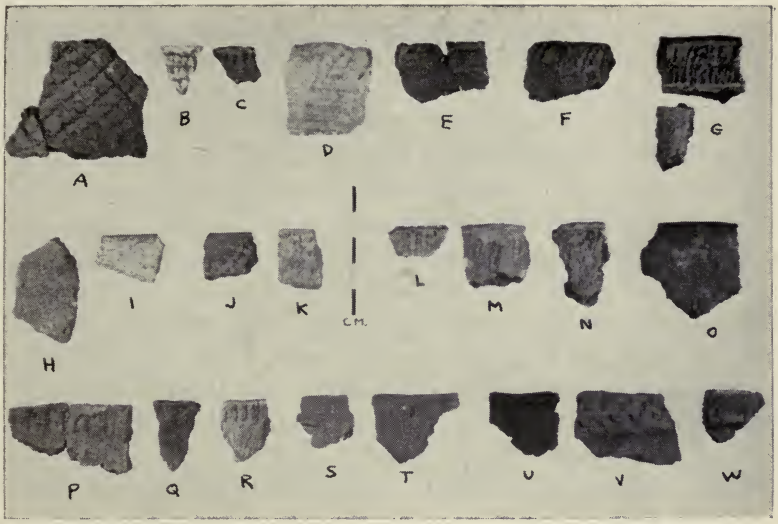


Fig. 43. Rimsherds, Knoop Rockshelter, Sk3.

		Square	Level
A.	Madison Cord Impressed	O4	2
B.	Madison Cord Impressed	O4	2
C.	Madison Cord Impressed	M4	3
D.	Madison Cord Impressed	P3	2
E.	Madison Cord Impressed	O3	3
F.	Madison Cord Impressed	M4	4
G.	Grit-tempered, cord-marked, incised	L6	3
H.	Baraboo Net-marked	M4	2
I.	Baraboo Net-marked	P4	3
J.	Baraboo Net-marked	P3	3
K.	Baraboo Net-marked	P4	2
L.	Denzer Stamped	O4	3
M.	Denzer Stamped	M4	2
N.	Denzer Stamped	K3	1
O.	Grit-tempered, smooth surface	M4	3
P.	Leland Cord-marked	P3	3
Q.	Leland Cord-marked	O4	1
R.	Leland Cord-marked	I4	2
S.	Shell-tempered smooth surface	P4	3
T.	Shell-tempered smooth surface	O4	3
U.	Grit-tempered, cord-marked	O3	3
V.	Hahn Cord Impressed	P4	2
W.	Grit-tempered, cord-marked, collared	P4	3

Summary and Interpretation

The deposit at this site was relatively thin and mixing of the artifacts in it is obvious. For instance, the distribution of small triangular projectile points — 5 in Level 1 of the various squares, 3 in Level 2, 4 in Level 3, and 2 in Level 4 — is indicative of this, if we would accept the idea that they are later in time than several of the other artifact types present in the same Levels (as indicated at the Durst site). The inevitable mixing which takes place at the surface of these sites would have a greater effect on a site with a slowly-accumulating, thin deposit such as this than a comparatively rapidly-accumulating, thick deposit.

Although the artifact inventory is small, it very likely represents a fair sample of the materials left behind by the various prehistoric groups that occupied the site. Except for the indications of temporal priority of Baraboo ware over Madison Cord Impressed and the very obvious evidence that the copper projectile point was one of the earliest artifacts at the site, little other chronological information can be determined from the depth distributions of artifacts. The presence at this site of many of the same artifacts and ceramic types found at the Durst site, however, suggests that the same prehistoric cultures had utilized both sites.

IV. THE ZECH ROCKSHELTER, Sk4

Location and Description

Baxters Hollow is one of the several steep narrow gorges which cut into the South Range of the Baraboo quartzite hills. It was eroded in pre-Cambrian times, later filled with Cambrian sandstone, and capped with the Lower Magnesian limestone of Ordivician age. Since the retreat of the seas which formed these rocks, long-continued erosion has removed all but a few traces of the limestone. The soft sandstone filling the gorge has been partially removed forming a delightful little glen long enjoyed by more recent visitors as well as the prehistoric Indians, in spite of the fact that this was one of the best rattlesnake localities in the state (Pope 1925:20-22). In Baxters Hollow lies the head of Otter Creek, the other of the two principal streams of southeastern Sauk County.

On the west side of the gorge, in the SE¼, SE ¼, Sec. 32, T11N, R6E, a small overhang provided shelter for the prehistoric Indians (Fig. 44). The site was pointed out to the writer in June, 1954, by James Teleford of Madison. Mr. Melvin Zech is the owner of the land.

The overhang is situated about 20 feet above the ground surface and protects an irregular area about 20 feet long and 15 feet deep. The shelter faces to the northwest but an equally high bluff several yards away provides a barrier to the winds of this direction. The bed of a tiny intermittent stream, tributary to Otter Creek, passes about 10 feet in front of the site. A large rock, fallen from above, occupies the center of the area beneath the overhang.

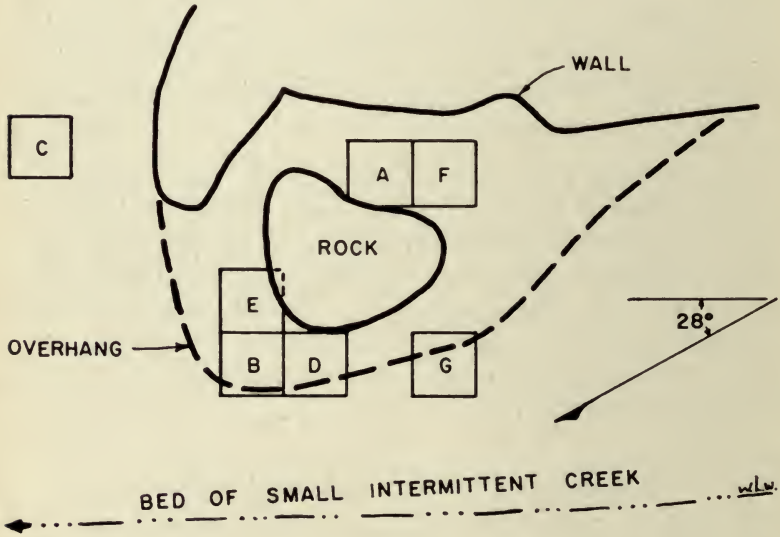
Excavation Procedure and Stratigraphy

This site was sampled on August 18 and 19, 1955, with the assistance of James Porter. Since the site was comparatively small in area, it was decided to reduce the usual 5-foot square grid (or test pit size) to 3 foot squares. Seven squares, a total surface area of 63 square feet, were investigated. The placement of the squares (identified by letters) is shown in Map 3. In all of the squares, the 0.1 to 0.2 foot layer of loose sand at

the surface was arbitrarily designated as Level 1. The compact soil below was excavated according to the usual 4-inch levels. Generally, Levels 2 and 3 were of gray sand. Below that the sand became lighter in color with occasional dark areas, which appeared on the profiles as short, horizontal streaks.

Signs of rodent activity were prevalent in Square A, but were lacking in the other squares.

Squares A and F were excavated to a depth of 2 feet; Squares C and G, to 1 foot; and Squares E, B, and D to a depth of 2.33 feet. The soil excavated was sifted through a ¼ inch mesh screen. Additional digging, without sifting, below the depths mentioned failed to disclose any further evidence of occupation. In the southern corner of Square E a 2-foot square shaft was dug to over 5 feet below the surface. The sides of this pit became irregular due to the presence of large rocks jutting out from the profiles. Several dark lenses of soil



THE ZECH ROCKSHELTER, Sk4

0 3 6 9
FEET

MAP 3

were passed through but no flakes, animal bone refuse, or artifacts were found. Five feet below the surface there was a 0.2 foot thick layer of black sand quite similar in its physical appearance to the black layer at the Durst site. The layer produced no indication of having served as an occupational surface. No signs were found in the brown sand which lay below it to an unknown depth.

The excavated portions of deposit contained a moderate amount of animal bone refuse, less than a handful af mussel shells, and a quantity of artifacts, primarily potsherds.

Cultural Remains

No prehistoric cultural remains were found in Level 1 of the seven squares. This level did contain, in Square B, a 1944 U. S. Cent.

Fig. 44. Zech Rockshelter, Sk4.

Chipped Stone

Only 13 flakes of local chert were found in over 117 cubic feet of earth excavated. The number of worked specimens, two, is also small, especially when compared to the amount of pottery found. One specimen was the tip of a projectile point; the other, a complete example of the Monona Stemmed type, 39 mm. long, 21 mm. wide, stem length 7 mm. (Fig. 46, H) was found in Level 4 of Square A.

Bone

Unfortunately, the depth from which the single bone artifact from this site came is not known. Test pit B had been left open overnight and one of the cows that had been let into the area for the night stepped too close to the south profile. In sifting the disturbed earth the next day, the charred, fragmentary split bone awl shown in Fig. 46, G, was found.

Ceramics

Six vessels are represented in a total of 141 potsherds. Sixty-eight of the sherds are from a single vessel of the Madison Cord Impressed type (Vessel A, Fig. 46, A). Squares A and F contained 61 of the 68 sherds. In Square A the sherds were found in Levels 2-6 and in Square F, in Levels 2-7. Since sherds from the lower levels actually joined sherds from the upper levels in both squares, it is obvious that the deposit had been disturbed in this area. The remaining 7 sherds of Vessel A were confined to Levels 2 and 3 of the other test squares. Most of the sherds from the remaining vessels were found in Levels 3, 4, and 5 of the various squares excavated.

Although there are good indications that the Madison Cord Impressed vessel is the latest at the site, the depth frequency distributions do not justify the making of chronological distinctions between the remaining six vessels. They are described individually with no cultural or temporal relationships implied in the order of listing. The designation by letters is to facilitate reference to Figs. 45 and 46.

Vessel B. The sherds indicate a large-sized, grit-tempered, cord-marked vessel. A 40 mm. band around the neck was carelessly smoothed and bears occasional fingernail impres-

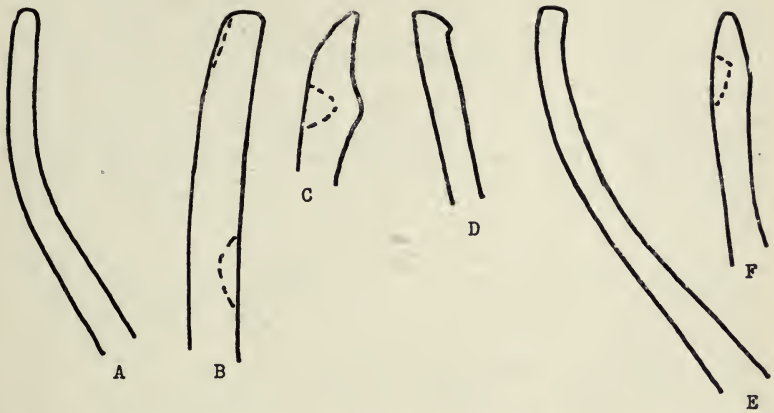


Fig. 45. Profiles of Rimsherds shown in Fig. 46. Interior surface at left. 7/10 scale.

Fig. 46. Artifacts, Zech Rockshelter, Sk4.

A. Madison Cord Impressed; B. Denzer Stamped; B'. Denzer Stamped Bodysherd; C. Denzer Stamped; D. Baraboo Net-marked; D'. Baraboo Net-marked Bodysherd; E. Baraboo Net-marked; F. Denzer Stamped; F'. Denzer Stamped bodysherd; G. Bone Awl; H. Monona Stemmed projectile point.

sions. Below this there appears a row of punctations made with a sharp-edged implement. Cord-wrapped edge impressions appear below the punctations for an unknown distance down the vessel wall. (Fig. 46, B'). The lip is smoothed. The inner rim bears vertical to slightly diagonal cord-wrapped edge impressions. The vessel appears to belong to the Denzer Stamped type, described for the Durst Rockshelter.

Vessel C. Grit-tempered and cord-marked. The decoration consists of nodes punched from the inside out, 15 mm. apart; 18 mm. below the lip. The lip is beveled on the inside and bears vertical to slightly diagonal cord-wrapped edge impressions. This vessel is also of the Denzer Stamped type.

Vessel D. These shell-tempered sherds are of a Baraboo Net-marked vessel. The lip is beveled toward the outside.

Vessel E. The sherds from this vessel, although thoroughly leached were once tempered with finely crushed shell. The body is net-marked and the neck smoothed-over-net-marked. The lip is smoothed and wider than the neck immediately below. This is also a Baraboo Net-marked vessel.

Vessel F. Grit-tempered, cord-marked body, smoothed-over-cord-marked neck. There are nodes punched from the inside out, 15 mm. apart, 12 mm. below the narrowly rounded lip. The decoration consists of two rows of closely spaced, slightly diagonal cord-wrapped edge impressions; one pendant on the lip, the other 50 mm. below the lip. This is a Denzer Stamped rimsherd.

Summary and Interpretation

All artifacts found at the Zech rockshelter can be assigned to the Middle Woodland period. The excavation procedure failed to disclose any signs of natural typological-statistical stratigraphy which would allow temporal distinctions between the artifacts, except for the indication that the Madison Cord Impressed vessel was the latest at the site.

V. THE GOV. DODGE STATE PARK ROCKSHELTER, Ia1

Location and Description

One of our state's newest scenc parks is named after Henry Dodge, first governor of the Wisconsin Territory. It is located 2 miles north of Dodgeville in Iowa County. The present park encompasses a 2-mile east-west valley at the head of Mill Creek, a stream which flows east and thence northward into the Wisconsin River. For years, the area had been known as Cox Hollow.

The valley is on the northern edge of Military Ridge, the Galena-Black River cuesta. Though the valley bottom is relatively flat, the walls are steep and in several areas, precipitous. An area underneath a slight rock overhang, high up on the north wall, has long been known locally as "deer cove" as frequently deer were observed sheltering there. The overhang is formed by a layer of dolomitic limestone. Underneath the overhang, 35 feet of the St. Peter sandstone are exposed. The sandstone, being less resistant than the limestone, has eroded under the latter 10 to 15 feet over a length of 50 feet along the valley wall at deer cove (Fig. 47).

The surface of the deposit underneath the overhang (Map 4) has a slight slant to the south. Outside the overhang, it has a steep slant southward to the valley bottom. West of the shelter, the surface adjacent to the wall bluff rises steeply.

Signs that deer cove had been occupied by the prehistoric Indians were noted by the writer on a visit in the spring of 1954. Bone and shell refuse, flakes, a chert knife, and the base of a Durst Stemmed projectile point were collected. On a subsequent visit in the fall, a rimsherd of a miniature pottery vessel or pipe was found. This was before the present park road was constructed and access was so difficult that it was decided to postpone testing operations until it was more convenient to get to the site.

Deer cove has been named, for the purposes of this report,

"The Gov. Dodge State Park Rockshelter." Its exact location is in the SE ¼, NW¼, Sec. 10, T6N, R3E, Iowa County.

Excavation Procedure and Stratigraphy

Since the site is located on public land it was necessary, under the provisions of 27.012 (2) of the Wisconsin Statutes, to obtain permission to excavate. This was kindly granted by Conservation Director L. P. Voigt, with the result that a 5-foot square test pit was excavated during the week of Aug. 20-24, 1956; Francis M. Brick assisted.

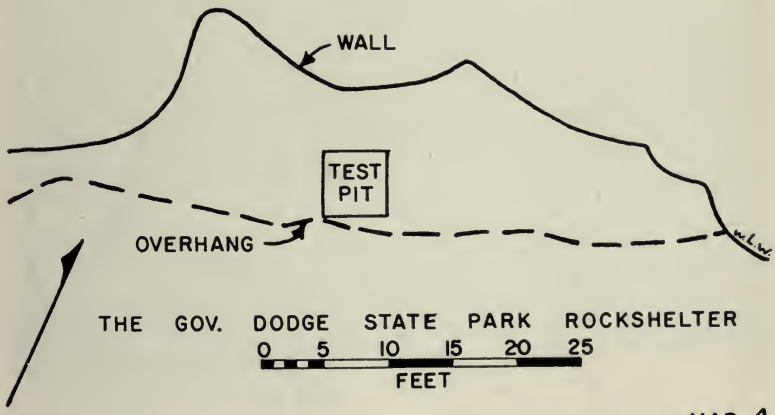
The location of the test square in relation to the rear wall and the edge of the overhang is shown on Map 4. The usual arbitrary 4-inch levels, parallel to the surface which slanted slightly to the south, were observed. The deposit from each level was put in a ¼-inch mesh screen.

Fig. 47. The Gov. Dodge State Park Rockshelter, Ia1.

The deepest artifact was in Level 13 at a depth of a little over 4 feet. The entire 5-foot square area was carried down to a depth of 5 feet but the only additional discoveries were a few exceedingly small chert flakes. It seemed apparent that the base of the occupied portion of the deposit had been reached. A 2-foot square shaft, however, was dug in the northwest quarter of the test pit to determine the nature of the deposit's deepest parts. The 4-inch levels were not observed in the excavation of the shaft, but the earth was passed through the screen. No further indication of occupation were noted. Bedrock was encountered at a total surface depth of 7.7 feet on the north profile and, as expected, the bedrock slanted away from the wall, toward the south.

The natural stratigraphy, as observed on the north profile was as follows:

1. A layer of loose dry sand at the surface from 0.1 to 0.2 foot in thickness.
2. A zone of light tan sand about 3 feet thick, extending approximately to the base of arbitrary Level 10 (depth 3.3 feet). The color of this zone graded into a dark gray in its lower ⅓.
3. A zone of several wide, light and dark brown bands mottled with root scars from a depth of 3.3 feet to 6.7 feet. There were 4 thin, very dark brown horizontal



MAP 4

stains running through the deposit in the lower 2 feet of this zone.

4. A zone of white sand, 1 foot in thickness, from 6.7 to 7.7 feet in depth.
5. Bedrock at 7.7 feet.

At the time these observations were made the profile's second zone of light tan, grading to gray in its lower portions, had dried for 24 hours due to the fact that the base of Level 10 marked the end of a day's work. The possibility existed that the color difference might be due to this fact. But, because soil samples were brought back to the lab, it was possible to compare the color of thoroughly dry lumps of deposit from each level. Although the dry samples were somewhat lighter in tone than when observed in a moist condition in the field, the same color distinctions could be made above and below the base of Level 10.

It is evident that the deposit was well leached. The overhang is not great and its high elevation above the surface of the deposit would not protect it from all rains. Runoff water from the plateau above was observed to cling to the overhang by surface tension causing the drip area to extend closer to

Fig. 48. Fireplace in Level 2, Gov. Dodge State Park Rockshelter, Ia1. Camera orientation, north.

the rear wall than the line directly underneath the edge of the overhang. Furthermore, surface runoff and subsurface drainage as well, runs from the high area at the west end of the shelter through the site to the east end.

Animal bone refuse was found primarily in the upper 4 levels. Below a depth of 1.3 feet only small calcined fragments were found. Soil acidity was quite high, the pH ranging from 5.1 to 6.0. The acidity, phosphorus and potassium soil tests on samples, taken from the center of the north profile, shown on Table 13, were determined by Theodore Peck.

Cultural Remains

A single feature, a fireplace of 10 large sandstone rocks in an area 2.4 feet in diameter, was found in Level 2 (Fig. 48). A modern .22 cartridge case was found in Level 1. The prehistoric artifacts from the test excavation are shown in Fig. 49. Table 12 tabulates them according to level and also gives the counts of flakes, bone fragments and soil test values. No bone or shell artifacts were found; their absence possibly being caused by the poor soil conditions for preservation.

Chipped Stone

Sixteen projectile points represent 5 types. Ten are Durst Stemmed, 2 are Raddatz Side-notched, 2 have straight stems, 1 is of the small diagonal notched type, and 1 resembles the Plainview form, except the base is not concave as the majority of this type and is not ground.

Four side scrapers and 4 flake scrapers were found. One scraper has a small concave edge 5 mm. long and 2 mm. deep.

Other chipped stone implements include 4 choppers, 1 flake drill, and 1 graver with a tip 2 mm. long.

Ceramics

Sixty-six small potsherds representing at least 3 vessels were found in the upper 3 levels of the test pit. A small Madison Cord Impressed vessel was represented by a tiny rimsherd and 2 small bodysherds. A second vessel, from which no rimsherds were found, was grit-tempered with a smoothed-over-cord-marked surface. The neck was decorated with single cord impressions in a diagonal cross hatched pattern

Fig. 49. Artifacts, Gov. Dodge State Park Rockshelter, Ia1.

Key to Fig. 49. Artifacts, Gov. Dodge State Park Rockshelter.

	Size in mm.			
	L	W	T	SL
A. Small diagonal notched proj. pt., chert, Level 3		17	3	6
B. Durst Stemmed proj. pt., chert, Level 3				
C. Durst Stemmed proj. pt., chert, Level 3		23	9	16
D. Durst Stemmed proj. pt., chert, Level 3				14
E. Durst Stemmed proj. pt., chert, Level 3		22	9	12
F. Durst Stemmed proj. pt., quartzite, Level 3	50	21	7	12
G. Durst Stemmed proj. pt., chert, Level 3	63	23	7	15
H. Durst Stemmed proj. pt., chert, Level 4				11
I. Durst Stemmed proj. pt., chert, Level 4		22	7	15
J. Durst Stemmed proj. pt., chert, Level 4	23	14	7	11
K. Durst Stemmed proj. pt., chert, Level 5	31	17	7	15
L. Straight Stemmed proj. pt., chert, Level 7				
M. Straight stemmed proj. pt., chert, Level 10		35	8	16
N. Raddatz Side-notched proj. pt., chert, Level 8				
O. Raddatz Side-notched proj. pt., chert, Level 11		33	7	12
P. Plainview form proj. pt., chert, Level 11		24		
Q. Side scraper, chert, Level 1	57	34	17	
R. Side scraper, chert, Level 2	44	32	17	
S. Side scraper, chert, Level 4	48	36	11	
T. Side scraper, chert, Level 9	67	44	21	
U. Small concave edge scraper, chert, Level 9	40	25	9	
V. Flake drill, chert, Level 1	17	13	3	
W. Rimsherd, min. pot. vessel, surface				
X. Graver, chert, Level 13	36	26	7	
Y. Cord decorated potsherd, Level 1				
Y' Dentate rocker stamped bodysherd, Level 3				
Z. Chopper, chert, Level 2	55	36	20	
A' Chopper, chert, Level 3	48	29	12	
B' Chopper, chert, Level 7	62	38	13	
C' Chopper, chert, Level 10	41	31	16	

(Fig. 52, Y). Sherds apparently from the shoulder of the same vessel were marked with a rocked dentate stamp (Fig. 52, Y'). The presence of 1 or more other vessels was indicated by 7 nondescript grit-tempered cord-marked bodysherds which evidently did not belong to the 2 vessels described.

The potsherds were distributed as follows:

Level	1	2	3
Madison Cord Impressed	1	2	
Cord decorated dentate stamped	16	28	12
Grit-temp., cord-marked	2	3	2

A surface find at the site, about 5 feet east of the test pit, was a fragment of a cup-shaped miniature pottery vessel, about 60 mm. in diameter (Fg. 52, X). It is grit-tempered and has a smooth surface. The design was applied by incising around the upper rim with small punctations between the lines, and incised pendant triangles filled with horizontal incised lines.

Summary and Interpretation

The information derived from the excavation of the test pit indicated that the deposit at this site had reached a thickness of about 3.7 feet before the surface was occupied by man. Subsequently, the deposit grew to a total thickness of 7.7 feet, the upper 4 feet containing various indications of human occupation. The color change of darker soil above a depth of 3.5 feet is due to the presence of charcoal flecks from the fires built by the occupants.

The soil tests for available phosphorous and potassium show high values, even in the lower portions of the deposit where definite signs of human occupation were lacking. It should be remembered that both of these are derived primarily from the disintegration of organic materials, and that it is possible that such materials may have been brought into the site by animals as well as humans. Since deer are known to have sheltered here recently, it is likely that they have done so for a long period of time. The high values for available phosphorous and potassium in the lower levels, then, may be accounted for by deer droppings and urine. Potassium salts are much more sol-

Level	pH	Available Potassium	Available Phosphorus	Bone fragments	Chert and Quartzite Flakes	Potsherds	Raddatz Side-notched PP	Durst Stemmed PP's	Straight stemmed PP's	Plainview form PP	Small diagonal notch PP	Side scrapers	Flake scrapers	Concave-edge scraper	Flake drill	Graver	Choppers	Frag. chipped-stone imp.
1	5.7	140	200	30	191	19						1			1			2
2	5.5	140	145	26	312	33						1					1	2
3	5.4	115	330	22	381	14		6			1						1	1
4	5.3	100	140	12	196			3				1	1					4
5	5.2	125	130	10*	118			1					1					2
6	5.1	135	180	3*	109								1					1
7	5.1	165	180	20*	140				1				1				1	
8	5.1	160	225	12*	198		1											
9	5.2	160	275	11*	376							1		1				1
10	5.3	190	260	4*	334				1								1	2
11	5.5	265	210	8*	234		1			1								
12	5.4	220	200		85													1
13	5.2	225	200	1*	64											1		
14	5.3	180	180		45													
15	5.4	180	140		26													
16	5.4	175	140															
17	5.4	240	145															
18	5.4	240	135															
19	5.5	175	130															
20	5.5	170	100															
21	5.5	125	90															
22	6.0	30	10															
23	6.0	25	5															
Bedrock																		

* Small calcined bone fragments

Table 12. Soil Tests and Artifacts, Gov. Dodge State Park Rockshelter, Ia1.

uble than those of phosphorus and can, under the right conditions, travel more in the soil.

The phosphorus salts, however, have a greater tendency to become fixed in their locus and not to travel up or down in the soil. This may explain why the depth distribution of high available phosphorus values coincides with the depth distribution of chert and quartzite flakes, in addition to the occurrence at depths below the flakes. Assuming that such frequencies reflect relative intensity of occupation, it can readily be seen from an examination of Table 13 that both curves are bimodal, that they are to a high degree coincident, and have peak values in Levels 3 and 9, and furthermore, that low points are reached in Levels 5 and 6 respectively.

Level 6, the low point in the distribution of flakes, therefore, separates 2 major zones of occupation. Below it, the materials are all typologically Archaic or possibly earlier, such as may be the case with the graver, the deepest artifact found. The 3 projectile point styles in this zone include straight-stemmed, Raddatz Side-notched, and 1 Plainview-like point. Side and flake scrapers and choppers were found in this zone and also in the zone above Level 6.

Two or more occupations are undoubtedly represented in Levels 1-5. The major one, interpreted as Late Archaic, was responsible for the 10 Durst Stemmed points in Levels 3-5. The small diagnal-notched point type, an example of which came from Level 3, has been shown at the Durst site to be later in time than the Durst points.

The potsherds in Levels 1-3 represent late Middle Woodland types.

Further excavation at this site are definitely warranted. Although a well defined stratigraphy is lacking, the occupied portion of the deposit is deep enough to allow typologico-statistical studies on a larger sampling of artifacts.

VI. GENERAL SUMMARY AND INTERPRETATIONS

The fieldwork and analyses presented in the preceding chapters were conducted for the specific purpose of obtaining chronological and other data which would bear on the problems outlined in the first chapter. The fact that virtually no subsurface archeological work had been done in the areas investigated is only incidental to the main purposes. Fortunately, most of the materials found do tie in with remains distributed over broad areas of the Midwest and consequently can be interpreted and evaluated with reference to this broader framework.

Rockshelters were selected for investigation because this type of site provided geologic conditions favorable to the formation of stratified deposits. In this chapter, emphasis will be given to the cultural and chronological significance of the materials and data found in the excavations. Basic to this discussion, however, is the consideration of rockshelters as a type of archeological site. From the data presented, it is obvious that they were used primarily as habitation sites although occasionally used for burial purposes. They are different from habitation sites in the open in that the shelter provided by the rock overhangs substituted for artificial structures. No evidence was found that additional protections against the elements, such as walls or screens, were built, but it is possible that they were used and have left no record in the soil.

Three of the four sites reported here were formed in the Cambrian sandstone. The fact that this formation is variable in the degree of cementation, in conjunction with the processes of weathering and wind erosion, has resulted in the formation of the rockshelters as well as the natural bridges, steep bluffs, and other characteristic topographical features of this formation in the Driftless Area. The writer postulates that at least some of the rockshelters reached approximately their present size and shape by the time of the Cary (Third Wisconsin) glacial substage when the Green Bay lobe advanced the farthest west of all the glaciations in Wisconsin; its end moraine forming the eastern border of the Driftless Area. Although weathering and erosion had been at work in this area since

long before, and have continued since the ice age, the effect of these forces must have been increased during the periods when a periglacial climate prevailed.

The Durst and Knoop rockshelters had little or no floor deposits when they were first occupied by man. The latter site which had been submerged under the waters of Glacial Lake Baraboo during Cary times produced no evidence of this fact. In all sites investigated the nature of the floor deposits indicated that during the period of Indian occupation a process of deposition was taking place. It is assumed, for lack of evidence to the contrary, that this process has been more or less continuous and has occurred at a fairly uniform rate. Very likely some variations did occur due to climatic fluctuations since glacial times and peculiar local conditions. No evidence was found that the prehistoric inhabitants had either removed soil from the deposits or that they had brought in quantities of soil to produce clean floors. Except for the distinctive Black layer of the Durst site, the major changes noted in the deposits were those caused by human agency, i. e., the presence of artifacts, faunal refuse, firebeds, pits, etc.

Obviously, the character of the remains left in the soil is determined by the kinds of human activities which have taken place at the site. It would seem that habitation sites such as these would contain the material remains concident with "living." However, most of the remains are things that were no longer useful to the processes of living and were therefore discarded. Pots that are broken, projectile points that have been shattered or resharpened so many times that they are no longer effective, and other broken, no longer useful, implements comprise the bulk of the discoveries. Furthermore, because of the confined area of occupation offered by these sites, the specimens have suffered additional breakage and alteration from trampling, pit-digging, fire-building, and other activities of the later inhabitants, and by the forces of nature which have not only erased the more perishable materials but have also tended to modify some of the non-perishable materials. Despite their condition, these artifacts are still useful for purposes of archeological analysis. Complete specimens may represent accidental

loses by the inhabitants of purposeful discards if they are easily made and not worthy of transport to other locations.

The existing chronological framework for Wisconsin's prehistory is based largely on the Culture Period sequence that has been determined for the Eastern United States. For lack of direct dating methods, except as reported in the **Introduction,** Wisconsin remains were placed into a chronogical order based on their typological similarities to the remains of one period or another of the sequence. It would be rather presumptuous to assume that the excavation of rockshelter sites is going to provide all of the details of prehistoric chronology, but it should be equally obvious from the data of this paper that some very important results can be obtained. The absence in the rockshelters of certain materials found on open sites in the immediate area, as discussed below, seems to be suggestive of varying types of usage during the different culture periods.

The contributions to the study of Wisconsin archeology offered by the present fieldwork and analyses can best be summarized according to the culture period sequence of the Eastern United States. In some cases zones and levels of the sites can be assigned with certainty to one culture period or another. Others, which undoubtedly represent a transitional period of deposition, contain artifacts of two or more periods. Hence, Zone 5 of the Durst rockshelter and Level 3 of the Gov. Dodge State Park rockshelter are listed under both Archaic and Middle Woodland periods.

Paleo-Indian

No fluted points or evidence of the hunting of large Pleistocene animals now extinct, were found. Probably Paleo-Indian cultures did occupy the Wisconsin area as shown by fluted point surface finds. These peoples may have occupied the sites investigated and simply left no diagnostic artifact types, lived in other rockshelters not investigated, or, perhaps, they may have possessed a way of life in which this type of shelter was unimportant or not utilized. Stratigraphically and typologically, the only remains encountered in the present work which **may** belong to this period are the gravers and the

"small" scrapers from the Durst site. Because everything below the top surface of the Black layer was lumped into Zone 6, it was not possible in the discussion of this site to show their possible temporal priority over the other artifacts of this zone. However, in Level 10 and below (present only in Rows F and G) there were 19 (of 22 for Zone 6) "small" scrapers and only 6 (of 25 for Zone 6) Raddatz Side-notched projectile points, the dominant type of this zone. The preponderance of scrapers in these early levels and the dearth of other cultural remains is perplexing. No doubt, these scrapers were used by a culture that had one or more projectile point types. The scrapers may have been associated with fluted points, not found at this site, but found in association at sites in Pennsylvania (Witthoft 1952) and Virginia (McCrary 1951), or, possibly, with the Raddatz points. The evidence is not conclusive. The writer favors the interpretation that the scrapers are earlier than the side-notched point type, but one would also have to accept the fact that one cultural group deposited the scrapers and little else at the site while a different group left the side-notched points but very few scrapers.

Archaic

On the basis of stratigraphy and typology, the depths of the following sites can be assigned to the Archaic period:

Durst rockshelter, Sk2, Zone 5 (part) and Zone 6.
Knoop rockshelter, Sk3, copper projectile point in Level 9.
Gov. Dodge State Park Rockshelter, Levels 3-13.

Except for the Knoop site, the projectile points found at the greatest depths in these sites belong to the Raddatz Side-notched type (at the Knoop site, it will be remembered, the deepest artifact was the base of an Old Copper type, copper projectile point). Projectile points of the same type are the dominant chipped-stone type associated with the Old Copper complex, the best known Archaic culture in the Wisconsin area (Wittry and Ritzenthaler 1956). Evidently, the well defined Archaic occupation of these sites could be crudely characterized as Old Copper "without the copper." The lack of copper at the rockshelter sites might be because they are

habitation sites, whereas the Old Copper sites reported were cemeteries and the artifacts found were burial associations. This difference in type of site could also account for the fine condition of the chipped stone at the cemeteries and the broken and resharpened condition of the "utilitarian" specimens found in the rockshelters. Copper implements are scarce at the habitation sites because 1) even though also used for utilitarian purposes, copper was a rarer material than the more easily obtained chert, 2) broken fragments could be reshaped into usable forms, or 3) what is represented here is the remains of an Archaic culture which shared chipped-stone implement types with Old Copper but which did not possess copper implements. Until new evidence forces us to change the interpretation, the present evidence indicates that the Archaic occupations of the rockshelters were closely related to Old Copper and are probably habitation sites of this culture, previously known in eastern Wisconsin only by surface finds and cemetery excavations.

The Archaic levels of these sites also contain other projectile point types. Some of these may be the result of disturbance, while others belong to this period. The Durst Stemmed points present in Zone 6 at the Durst site are probably there as a result of mixing of the deposit and the arbitrary manner in which the site was excavated and the zones defined. This does not mean that they do not belong to the Archaic period in Wisconsin. On the basis of their distribution at this and other rockshelter sites, it would appear that this type is Late Archaic, later in time than the side-notched points which characterize the Middle Archaic in Wisconsin and Illinois (c. f., Fowler 1959a).

Straight-stemmed points are also present in the Archaic levels. Their depth distributions indicate that they were roughly contemporary with the Raddatz Side-notched points of the Middle Archaic, perhaps persisting over a longer span of time. Other artifact types present in the Archaic occupations include; gravers, small ovate knives, polished bone needles or awls, and split bone awls.

Early Woodland

Practically no remains were found which would compare with materials of the Early Woodland period as it has been defined. The only evidence which would be generally accepted is the incised-over-cord-marked pottery from the Knoop site which resembles the Black Sand ware of Illinois. The lack of strong evidence of an Early Woodland occupation in the rockshelters is not surprising in view of the small amount of evidence for it elsewhere in Wisconsin. Apparently, cultures of this area maintained a basically Archaic stage of culture development through the Early Woodland period of the Eastern United States. A few material traits of this period were incorporated into the local Archaic complexes, suggesting a transitional status for the very late Archaic cultures. The major change in prehistoric cultures of the area resulted from the introduction of agriculture during the Middle Woodland period.

Middle Woodland

Durst rockshelter, Sk2, Zones 1-5.
Knoop rockshelter, Sk3, materials mixed in deposit.
Zech rockshelter, Sk4, site occupied only during this period.
Gov. Dodge State Park Rockshelter, Ia1, Levels 1-3.

As indicated above, all sites investigated bore evidence of occupation during the Middle Woodland period. One site, the Zech rockshelter, was occupied only during this period. Except in the case of the mixed deposit at the Knoop rockshelter, the Middle Woodland occupations were near the top of the deposits and were underlain by only one major occupation, the Archaic.

Indications of temporal change in material culture within this period were present at the Zech and Durst sites. At both, Madison Cord Impressed was the latest pottery type. At the Durst site, temporal distinctions could be made on the basis of the stratigraphic placement of the Middle Woodland wares. The earliest pottery was Denzer Stamped which, as noted above, resembles the Havana ware pottery of Illinois, partic-

ularly its later variants (James B. Griffin, personal communication, 1958).

Only two vessels are represented by sherds bearing a dentate stamp decoration (Categories H and I) at the Durst site. On a comparative basis with pottery of the Illinois River Valley, these would appear to date with, or slightly later than, the Denzer Stamped type which is the indication given by the distribution of the few sherds at the site. The Durst site Category I sherds closely resemble Denzer Stamped sherds from the Zech site.

Baraboo ware, including the two related types with cord-marked and net-marked surfaces, presents a highly enigmatic problem. It has not been previously described or reported. In addition to its occurrences in the rockshelters, it is included in surface collections from sites in Sauk and Columbia Counties, and was present in the Cooper rockshelter, Sk1. In this area and in eastern Minnesota, a grit-tempered variety of the Net-marked type is also found. Aside from its shell tempering, Baraboo ware somewhat resembles Leland Cord-marked and Weaver ware in vessel, rim, and lip forms, with a slightly different execution of the typical Weaver rim and lip decoration.

The term **Madison ware** has been used in reference to Madison Cord Impressed and Madison Plain, the latter simply being a plain companion type to the former. No chronological distinctions could be made between these two types either in Keslin's (1957) work or at the Durst site, although there is a possibility that the plain type may have a longer time range. An analysis of the areas decorated and technique of decoration (Table 9) failed to disclose any readily apparent differences in depth distribution among the sherds of these types present at the Durst site.

Wisconsin Hopewell — Effigy Mound Relationships

Perhaps the most significant data of the present investigations is the local sequence of Middle Woodland pottery types derived mainly from the stratigraphy of the Durst shelter. The similarity of Denzer Stamped pottery to Havana ware of Illinois has been pointed out. It has an even closer

similiarity to Middle Woodland "utility" pottery found associated with finer Hopewell pottery at Trempealeau focus sites, and is also found in the Red Cedar River focus which lacks Hopewell fineware. The occurrence of Denzer Stamped at the Durst site primarily in Zones 4 and 5 indicates that these levels should be equated in time with the Hopewellian occupation of the Wisconsin area. The phenomenon of "progressive mixing," the tendency of recent deposits to contain an admixture of earlier artifacts, probably accounts for the Denzer Stamped sherds in the upper zones. The pottery platform pipe from Zone 5 is of a distinctive Hopewell type. Other artifacts from these zones which are Hopewellian in character include Monona Stemmed projectile points and flake knives. The Durst Stemmed points, probably originating in Late Archaic times, continued to be used during the Middle Woodland period and have also been found in the Trempealeau and Red Cedar River foci (McKern 1931, Pl. 37, Fig. 2; personal observation of Milwaukee Public Museum collections).

At the Durst rockshelter, the stratigraphic position of Denzer Stamped pottery is definitely below Madison Cord Impressed and Madison Plain. These latter two types, representing Madison ware, are one of the only two varieties of pottery found intentionally placed in Effigy Mounds (except at the Diamond Bluff site, Maxwell 1950). The other variety, including at least one defined type, Hahn Cord Impressed, has a collared rim, frequently bears a more complex cord impressed design, and in general can be considered to have been developed at a slightly later time than Madison ware.

The evidence from the Durst site thus sheds the following light on the cultural and temporal relations between the Hopewellian and Effigy Mound cultures: Effigy Mound groups occupied the site sometime later than the Middle Woodland groups who were related to the Hopewellians, or who at least existed about the same time as the Trempealeau and Red Cedar River Hopewellians. The fact that this evidence on relative age is derived basically from one site must be considered, but the stratigraphic relationships are clearly appar-

ent and the geographic position of the site, near the heart of the Effigy Mound area, is important.

Other than generalized aspects of paste and surface finish, there is little resemblance between Denzer Stamped and Madison ware pottery. This apparent typological and known temporal gap is filled, however, by Leland Cord-marked, a local variant of Weaver ware. To judge by the position of the latter in the Illinois sequence, and the stratigraphic position of Leland pottery in the Durst shelter, it apparently dates closer to Madison ware than to Denzer Stamped.

The picture becomes complex, but not necessarily inexplicable, when present data relating to the Effigy Mound area are brought into consideration. First of all, there is not now, and never has been any good evidence to indicate that Wisconsin Hopewellian and Effigy Mound (as both were defined by McKern) were contemporary, or that the latter preceded the former in the area. On the other hand, recent evidence including the Durst site stratigraphy and certain radiocarbon dates show that the Effigy Mound culture developed locally mainly after the Hopewellian climax in Wisconsin.

Recent excavations have revealed Hopewellian remains in Dane County (Whiteford 1949; Bakken 1950; Baerreis n. d., U. of Wis. archeological field session of 1949) Dodge County (Niehoff 1956), and Fond du Lac County (Baerreis 1953a). It is perhaps stretching the point to call every one of these sites Hopewellian as most of them lack distinctive Hopewell artifacts. The mounds, however, did cover subfloor rectangular burial pits and such pottery as was found included in the fill was of generalized Middle Woodland types probably dating from Hopewell times. Surface finds of the same pottery and distinctive Hopewell platform pipes have been made over most of the southern half of the state. It would seem that these remains date from prior to the emergence of the Effigy Mound culture in the area.

It also seems significant that whatever evidence exists for cultural contact between Hopewellian and Effigy Mound is limited in its geographical distribution to the western border of the Effigy Mound area, particularly in Jo Daviess County

in northwestern Illinois. Here, Bennett (1945) has defined the Jo Daviess focus of the Effigy Mound aspect consisting mostly of linear and conical mounds. The so-called Nickerson focus of Hopewellian in the same area, interestingly enough, does not show any contact with Effigy Mound. The Chapman group of conical mounds exhibited a number of Effigy Mound traits and probably represents a somewhat later manifestation based on the pottery resemblances with Tampico pottery of late prehistoric times and also with the Aztalan Woodland ware.

In keeping with my interpretations expressed below, I can only attribute the Hopewellian influence in the Jo Daviess focus and other Effigy Mound manifestations in the western border area to the fact that, although Hopewell had died out by 500 A. D. in this area, there remained among the resident groups some very attenuated Hopewellian burial customs which merged with the later Effigy Mound burial practices.

A few pottery vessels combining Madison Cord Impressed decoration and rocker-stamped bodies have been found in the western border area (Field 1950, Beaubien 1954) and at the Gov. Dodge State Park Rockshelter. The vessel reported by Beaubien was found in the fill of the largest mound of the Sny-Magill group, 6 miles south of McGregor, Iowa. The mound contained burials and implements suggestive of an Early Woodland or Early Middle Woodland placement. Beaubien, in a recent conversation (April, 1958) said that the sherds of this vessel were in a small concentration within a foot of the mound surface and may have been intruded into the mound at a more recent time than the 2500 B. P. radiocarbon dates on the inclusive features. These vessels are the only major evidence which runs counter to the following interpretation concerning the origin and placement of the Effigy Mound culture. Just as we have suggested some survival of Hopewellian burial customs beyond the climax of this culture along the Mississippi River, it is also possible that the technique of rocker stamping may have also persisted there for some time. The radiocarbon date of A. D. 1053 + − 300 years from a Hopewellian mound at Effigy Mounds National Monu-

ment tends to support the suggestion of late survivals (Beaubien 1953:64).

The concept of a Proto-Effigy Mound stage must remain as only a suggestion until adequate proof is forthcoming. It is based on the excavation of 3 small mounds in Burnett County (McKern 1935:157). McKern, in a letter dated 2/21/58, stated that no bones were found in the subfloor pits and that such pottery as was found in the mounds, included one nearly complete pot crowded into the corner of one of the pits, was simply cord-roughened Woodland ware lacking a decoration. McKern also noted the occurrence of groups of conical and elongated mounds, not only on the northern margin of the Effigy Mound area, but also in Iowa, southwest of the effigy area. The possibility that these mounds may represent marginal influence rather than either an earlier or later period was admitted.

Indeed, some of these groups of small oval and conical mounds on the northern and western periphery of the Effigy Mound area may even actually postdate the golden age of the Effigy Mound people and represent a dispersion of refugee groups from southeastern Wisconsin caused by the entrance of hostile early Mississippi peoples. The only support for early placement is relatively poor skeletal preservation, but mound groups which contained artifacts of late type also showed very poor bone preservation (Wittry 1959a). Excavations at the Ross mound group of Wood County (Nash 1933) produced evidence of exceedingly poor bone preservation, yet the pottery in the mounds indicated a relatively late time placement according to the Durst site stratigraphy (this report, Table 9, column 7). The sherds from the Ross site are identical to some from the Durst site.

Although the Keshena focus of Shawano and Oconto Counties (McKern 1942, 1945:118; Barrett and Skinner 1932) is classified in a different aspect of the Lake Michigan phase than Effigy Mound, it has a number of cultural similarities and may represent a late decendent of Effigy Mound. Similarly, the Clam River focus of Burnett County is placed in an unclassified aspect and is a late manifestation bearing some cul-

tural resemblances to Effigy Mound. I do not wish to state that either or both the Keshena and Clam River foci are direct cultural descendants of Effigy Mound. McKern's interpretation of Clam River as protohistoric Sioux and the Keshena focus as prehistoric Menominee — tribes of vastly different linguistic stocks — would tend to rule out their both being descendants of a cultural unit as homogeneous as an aspect of the Midwestern taxonomic classification. The point is simply to stress the fact that excavated mounds of northern Wisconsin which contained artifacts all show indications of a relatively late prehistoric time placement, regardless of skeletal preservation.

The idea proposed by the present author is that the Effigy Mound culture developed in Wisconsin essentially after "Classic" Hopewellian of the area had disappeared. As a calculated guess, the temporal dividing line between the two occupations may be placed at between 500 and 600 A. D. There are no radiocarbon dates on Wisconsin Hopewell but the overall similarities with dated Hopewell sites elsewhere would indicate a placement within the first few centuries A. D., possibly later for the Red Cedar focus. The disappearance of Hopewellian from Wisconsin is as difficult to reconstruct from present data as the emergence of the Effigy Mound culture. We cannot state, for example, that Wisconsin Hopewellian disappeared by "collapse" (c. f. Maxwell 1951:263); by elimination, in the sense of warfare, by local tribes; or by fading away through mergence with the numerically dominant local (Late Archaic?) cultures.

The specific burial customs of Effigy Mound, aside from mound-building, have their closest parallel with the preceding Archaic Old Copper culture. The Effigy Mound copper axes and awls bear a greater typological similarity to those of Old Copper than to Hopewellian forms. The Effigy Mound culture could have originated from the addition of mound building, pottery, and presumably agriculture to the Late Archaic peoples of the area — groups who maintained an Archaic stage of cultural development through the Early Woodland period of the Eastern United States and well into the Middle Woodland period. There was not a direct transition from Late

Archaic cultures to Effigy Mound, however. The former were first influenced to a slight degree by Early Woodland cultures to the south and southeast of the Wisconsin area. It appears that Middle Woodland influences were more strongly felt and that, as indicated above, there was a Middle Woodland occupation of the area which preceded the emergence of the Effigy Mound culture, and which may have been, in a general manner, partly influential in the origin of the latter.

That the Effigy Mound culture possessed agriculture can only be conjectured due to the fact that most of the data has been derived from burial sites. However, the general time placement would indicate that food cultivation was present. Charred corn was found in the late Effigy Mound culture mounds of the Chapman group in northeastern Illinois (Bennett 1945:71) and in pits of the late campsite, possibly representing late Effigy Mound in Dane Ciunty (Dietz et al 1956). The shell implement from Zone 2 of the Durst site (Fig. 19a) is of a type generally interpreted as an agricultural hoe and its position in the stratigraphy of the site would place it with the Effigy Mound culture.

In addition to the radiocarbon dates of A. D. 1023 + − 300 years from the Effigy Mounds National Monument bear mound (Beaubien 1953:64) and A. D. 776 + − 250 years from Kolterman Mound 18 in Dodge County (Wittry 1956), there are other indications of relative lateness and survival into Mississippi times. Some of this evidence has existed in the literature for a considerable time but has been overlooked, such as the presence of Oneota pottery in the mounds of the McClaughry group. "This ware, found only in the McClaughry mounds and at adjoining campsites, seems to have had a general though limited distribution at that site. It occurred in the same mounds, even associated with the same features as type 1 ware. No localization of any description was apparent" (McKern 1928:270; Pl. 55, Fig. 1). Both Middle and Upper Mississippi pottery was found in the mounds at the Diamond Bluff site (Maxwell 1950). It might be noted that skeletal preservation in these late mounds of northwestern Wisconsin was very poor.

The association of small triangular projectile points with the

Effigy Mound culture has been demonstrated at the Durst site and at a number of other recently excavated sites (Baerreis 1953, 1954; Keslin 1957; Wittry and Bruder 1955; Bradley Blake n. d. Portage County; Maxwell 1950; Wittry 1959a). Triangular projectile points were found in relatively small numbers in effigy mounds by McKern (personal communication 3/20/58) but the original reports do not divulge the exact occurrences. Apparently, some were found at the McClaughry group (McKern 1928, Pl. 36, Fig. 2), and Nitschke group (McKern 1930, Pl. 67, Fig. 1). It is possible that the Effigy Mound manifestations which contain small triangular projectile points may represent a later stage of culture than those which possessed only stemmed and notched types.

In conclusion, present evidence indicates a Late Middle Woodland origin for the Effigy Mound culture and a survival into the Late Woodland and Mississippi Period in the Wisconsin area. This interpretation is somewhat at variance with the current literature, but it seems justified by the available data.

Late Woodland and Mississippi

Artifacts characteristic of the final prehistoric culture period were found at the rockshelter sites in such limited amounts that this period can hardly be said to be strongly represented. The evidence consists of a half-dozen rimsherds from collared (i. e., "braced-rim") vessels at the Durst and Knoop sites and a few shell-tempered, smooth surface (apparently Oneota) sherds from the Knoop site. The collared sherds at the Durst site were restricted to the uppermost levels (Zone 1). Some of the small side-notched and unnotched triangular points may have been left at the sites by Mississippi or Late Woodland groups, but this does not materially affect the conclusion that these sites were no longer used as habitations during this period. Perhaps, by this time, agriculture had become of such importance in the economy that settlement patterns became oriented toward semi-permanent villages located close to the crops. The village sites do contain evidence that hunting of both large and small game was still important, but the very presence of the remains at the village sites indicates that the animals were brought back to the village for consumption.

Historic Period

The few articles found which date from recent times were probably left at the sites by recent hunters and picnicers rather than Indians. There are local traditions that the Durst site had been visited by Winnebago families as late as the 1890's but nothing was found in the soil to confirm this fact.

VII. CONCLUSIONS

Excavations at five * rockshelter sites located in the eastern part of the Driftless Area of Wisconsin have shown that these sites were occupied almost exclusively during the Archaic and Middle Woodland culture periods. In the last chapter, the data were summarized according to the culture period sequence of Eastern United States. In Wisconsin, the periods can be used in reference to both specific segments of time and to stages of culture development if it is understood that there may have been a temporal lag of some of these periods and stages in the Wisconsin area due to its geographical position in relation to the major centers of culture development.

Three of the sites contained relatively deep floor deposits and were occupied over a considerable time during the deposition so that the cultural materials were arranged in stratigraphic relationships. Minor chronological distinctions could be made at the other two sites. Insofar as these artifact types are diagnostic traits of known cultural complexes, their stratigraphic positions as determined by this study provides additional evidence bearing on the relative dating of these complexes, on cultural change in Wisconsin's prehistoric past, and on the economy of the cultures represented. The preponderance of projectile points and faunal refuse over all other material remains indicative of food supply proves these sites to have been primarily hunting stations. The analysis of the Durst site showed rather conclusively that during the Archaic period the shelters were primary habitation sites, while during the Woodland periods they were used mostly as auxiliary hunting stations by the presumably food-producing cultures. An analysis of faunal remains by Paul W. Parmalee (to be published in the March, 1960 issue of **The Wisconsin Archeologist**) bears out this interpretation.

---

* The four sites here reported and the Raddatz rockshelter (Wittry 1959).

BIBLIOGRAPHY

BAERREIS, DAVID A

1948 The Wisconsin Archeological Survey. **The Wisconsin Archeologist,** n. s., Vol. 29, No. 1, pp. 18-22.

1949 Some Comments on Trait Lists and the Hopewellian Culture. **The Wisconsin Archeologist,** n. s., Vol. 30, No. 4, pp. 65-73.

1951 The Preceramic Horizons of Northeastern Oklahoma. **Anthropological Papers No. 6,** Museum of Anthropology, University of Michigan.

1953 Blackhawk Village Site (Da5), Dane County, Wisconsin. **Journal of the Iowa Archeological Society,** Vol. 2, No. 4, pp. 5-20.

1953a Notes and News. **American Antiquity,** Vol. 19, No. 2, p. 199.

1953b The Airport Village Site, Dane County (Da2). **The Wisconsin Archeologist,** n. s., Vol. 34, No. 3, pp. 149-164.

1954 Further Information on the Frost Woods Mound Group (Da1). **The Wisconsin Archeologist,** n. s., Vol. 35, No. 2, pp. 43-49.

BAKKEN, CHARLOTTE T.

1950 Preliminary Investigations at the Outlet Site. **The Wisconsin Archeologist,** n. s., Vol. 31, No. 2, pp. 43-70.

BARRETT, S. A.

1933 Ancient Aztalan. **Bulletin of the Public Museum of the City of Milwaukee,** Vol. 13.

BARRETT, S. A., and E. W. HAWKES

1919 The Kratz Creek Mound Group. **Bulletin of the Public Museum of the City of Milwaukee,** Vol. 3, No. 1.

BARRETT, S. A., and ALANSON SKINNER

1932 Certain Mounds and Village Sites of Shawano and Oconto Counties, Wisconsin. **Bulletin of the Public Museum of the City of Milwaukee,** Vol. 10, No. 5.

BEAUBIEN, PAUL L.

1953 Cultural Variation within two Woodland Mound Groups of Northeastern Iowa. **American Antiquity,** Vol. 19, No. 1, pp. 56-66.

BENNETT, JOHN W.

1945 **Archeological Explorations in Jo Daviess County, Illinois.** The University of Chicago Press.

1952 The Prehistory of the Northern Mississippi Valley. In **Archeology of Eastern United States,** ed. by James B. Griffin, pp. 108-123. The University of Chicago Press.

COLE, FAY-COOPER

1943 Chronology in the Middle West. **Proceedings of the American Philosophical Society,** Vol. 86, No. 2, pp. 299-303.

COLE, FAY-COOPER and THORNE DEUEL

1937 **Rediscovering Illinois.** The University of Chicago Press.

COLE, H. E.

1922 Summary of the Archeology of Western Sauk County, **The Wisconsin Archeologist,** n. s., Vol. 1, No. 3, pp. 82-111.

BROWN, CHARLES E.

1907 The Implement Caches of the Wisconsin Indians. **The Wisconsin Archeologist,** Vol. 6, No. 2, pp. 47-70.

1932 A Copper Bird Effigy Ornament. **The Wisconsin Archeologist,** n. s., Vol. 11, No. 3, pp. 104-107.

COOPER, L. R.
1933 The Red Cedar River Variant of the Wisconsin Hopewell Culture. **Bulletin of the Public Museum of the City of Milwaukee,** Vol. 16, No. 2.

DEUEL, THORNE
1935 Basic Cultures of the Mississippi Valley. **American Anthropologist,** n. s., Vol. 37, No. 3, pp. 429-445.

DIETZ, E. F., D. A. BAERREIS, ROBERT NERO, & HUGH C. CUTLER
1956 A Report on the Dietz Site (Da12), Dane County, Wisconsin. **The Wisconsin Archeologist,** Vol. 37, No. 1, pp. 1-18.

FIELD, HENRY P.
1950 A Woodland Pot Recently Found in Allamakee County, Iowa. **The Minnesota Archaeolologist,** Vol. 16, No. 3, pp. 3-8.

FOWLER, MELVIN L.
1955 Ware Groupings and Decorations of Woodland Ceramics in Illinois. **American Antiquity,** Vol. 20, No. 3, pp. 213-225.
1959 The Modoc Rockshelter: An Early Archaic Site in Southern Illinois. **American Antiquity,** Vol. 24, pp. 257-270.
1959a Summary Report of Modoc Rockshelter: 1952, 1953, 1955, 1956. **Report of Investigations No. 8,** Illinois State Museum.

FOWLER, MELVIN L., and HOWARD WINTERS
1956 Modoc Rockshelter: Preliminary Report, with Faunal Analysis by Paul W. Parmalee. **Report of Investigations No. 4,** Illinois State Museum.

FORD, J. A., and GORDON R. WILLEY
1941 An Interpretation of the Prehistory of the Eastern United States. **American Anthropologist,** n. s., Vol. 43, No. 3, pp. 325-363.

GRIFFIN, JAMES B.
1943 **The Fort Ancient Aspect.** University of Michigan Press.
1946 Cultural Change and Continuity in Eastern United States Archaeology. In Man in Northeastern North America, ed. by Frederick Johnson. **Papers of Robert S. Peabody Foundation for Archaeology,** Vol. 3, pp. 37-95.
1952 Culture Periods in Eastern United States Archeology. In **Archeology of Eastern United States,** ed. by James B. Griffin, pp. 352-364. The University of Chicago Press.

KESLIN, RICHARD O.
1957 A Preliminary Report on the Hahn (Dg1 and Dg2) and Horicon (Dg5) Sites, Dodge County, Wisconsin. M. A. Thesis, University of Wisconsin. Published in **The Wisconsin Archeologist,** n. s., Vol. 39, No. 4 (1958).

LAPHAM, I. A.
1955 The Antiquities of Wisconsin. Smithsonian Institution. **Contributions of Knowledge,** Vol. 7, Article 4.

MARTIN, P. S., GEORGE I. QUIMBY, and DONALD COLLIER
1947 **Indians Before Columbus.** The University of Chicago Press.

MAXWELL, MOREAU S.
1950 A Change in the Interpretation of Wisconsin's Prehistory. **Wisconsin Magazine of History,** Vol. 33, No. 4, pp. 427-443.
1951 Woodland Cultures of Southern Illinois. Logan Museum Publications in Anthropology. **Bulletin,** No. 7.

McCARY, BEN C.
1951 A Workshop Site of Early Man in Dinwiddie County, Virginia. **American Antiquity,** Vol. 17, No. 1, pp. 9-17.

McKERN, W. C.
1927 Impressions from a Neighboring Archeological Field. **Yearbook of the Public Museum of the City of Milwaukee,** Vol. 6, 1926, pp. 58-63.
1828 The Neale and McClaughry Mound Groups. **Bulletin of the Public Museum of the City of Milwaukee,** Vol. 3, No. 3.
1930 The Kletzien and Nitschke Mound Groups. **Bulletin of the Public Museum of the City of Milwaukee,** Vol. 3, No. 4.
1931 A Wisconsin Variant of the Hopewell Culture. **Bulletin of the Public Museum of the City of Milwaukee,** Vol. 10, No. 2.
1931a. Wisconsin Pottery. **American Anthropologist,** n. s., Vol. 33, pp. 383-389.
1931b Archeological Field Work in La Crosse, Vernon and Crawford Counties. **Yearbook of the Public Museum of the City of Milwaukee,** Vol. 9, 1929, pp. 7-26.
1935 Notes and News. **American Antiquity,** Vol. 1, No. 2, pp. 157, 158.
1936 Notes and News. **American Antiquity,** Vol. 2, No. 2, pp. 147, 148.
1939 The Midwestern Taxonomic Method as an Aid to Archaeological Culture Study. **American Antiquity,** Vol. 4, No. 4, pp. 301-313.
1939a Wisconsin Archeology in the Light of Recent Finds in Other Areas. **The Wisconsin Archeologist,** n. s., Vol. 20, No. 1, pp. 1-5.
1942 The First Settlers of Wisconsn. **Wisconsin Magazine of History,** Vol. 26, December, pp. 153-169.
1945 Preliminary Report on the Upper Mississippi Phase in Wisconsin. **Bulletin of the Public Museum of the City of Milwaukee,** Vol. 16, No. 2.

NASH, PHILLEO
1933 The Excavation of the Ross Mound Group I. **Bulletin of the Public Museum of the City of Milwaukee,** Vol. 16, No. 1.

NIEHOFF, ARTHUR
1956 The Prawatschke Mound Group, a Woodland Burial Complex. **The Wisconsin Archeologist,** n. s., Vol. 37, No. 3, pp. 87-93.

POPE, T. E. B.
1925 Hunting Wisconsin Rattlesnakes. **Yearbook of the Public lic Museum of the City of Milwaukee,** Vol. 3, 1923, pp. 13-27.

RITZENTHALER, ROBERT E.
1946 The Osceola Site: An "Old Copper" Site near Potosi, Wisconsin. **The Wisconsin Archeologist,** n. s., Vol. 27, No. 3, pp. 53-70.
1953 Prehistoric Indians of Wisconsin. Milwaukee Public Museum, **Popular Science Handbook Series No. 4.**

ROWE, CHANDLER W.
1956 The Effigy Mound Culture of Wisconsin. Milwaukee Public Museum, **Publications in Anthropology No. 3.**

SETZLER, FRANK M.
1940 Archeological Perspectives in the Northern Mississippi Valley. In **Essays in Historical Anthropology of North America,** Smithsonian Miscellaneous Collections, Vol. 100, pp. 253-290.

SHETRONE, H. C.
1926 Explorations of the Hopewell Group. **Ohio Archeological and Historical Quarterly,** Vol. 35, No. 1, pp. 154-163.

STOUT, A. B.
1906 Summary of the Archaeology of Eastern Sauk County, **The Wisconsin Archeologist**, Vol. 5, No. 2, pp. 230-288.

WHITEFORD, A. H.
1949 A Report of the Outlet Site on Lake Monona. **The Wisconsin Archeologist,** n. s., Vol. 30, No. 1, pp. 22-35.

WITTHOFT, JOHN
1952 A Paleo-Indian Site in Eastern Pennsylvania: An Early Hunting Culture. **Proceedings of the American Philosophical Society,** Vol. 96, No. 4, pp. 464-495.

WITTRY, WARREN L.
1951 A Preliminary Study of the Old Copper Complex. **The Wisconsin Archeologist,** n. s., Vol. 32, No. 1, pp. 1-18.
1952 The Preceramic Occupation of the Smith Site, Units I and II, Delaware County, Oklahoma. M. A. Thesis, University of Wisconsin.
1956 Kolterman Mound 18 Radiocarbon Date. **The Wisconsin Archeologist,** n. s., Vol. 37, No. 4, pp. 133, 134.
1957 A Glimpse at the Status of Wisconsin Archeology. **Wisconsin Academy Review,** Vol. 4, No. 2, pp. 65-68.
1959 The Raddatz Rockshelter, Sk5, Wisconsin. **The Wisconsin Archeologist,** n. s., Vol. 40, No. 2, pp. 33-69.
1959a The Wakanda Park Mound Group, Dn1, Menomonie, Wisconsin. **The Wisconsin Archeologist,** n. s., Vol. 40, No. 3,

WITTRY, WARREN L., and DR. E. G. BRUDER
1955 Salvage Operations at the Kolterman Mound Group, Dodge County. **The Wisconsin Archeologist,** n. s., Vol. 36, No. 1, pp. 3-12.

WITTRY, WARREN L., and ROBERT E. RITZENTHALER
1956 The Old Copper Complex: An Archaic Manifestation in Wisconsin. **American Antiquity,** Vol. 21, No. 3, pp. 244-254.

WOOD, E. F.
1936 A Central Basin Manifestation in Eastern Wisconsin. **American Antiquity,** Vol. 1, No. 3, pp. 215-219.

A PLEA FROM YOUR PRESIDENT

During the past year there have been several important contributions to Wisconsin archeology. Dr. Warren Wittry spent several weeks excavating the Bell Site at Lac Butte des Morts — Dr. Chandler Rowe has excavated a portion of the Aztalan Site, and Dr. Stephen de Borhegyi conducted underwater research at Rock Lake near Aztalan. These are but a few samples of the work which has been done, and which will be reported on in subsequent issues of **The Wisconsin Archeologist.** Much as most of us enjoy surface hunting and an occasional 'dig', we are dependent upon, and rightly so, the leadership of professionally trained archeologists, without whom we would become just 'pot-hunters'. We have been very fortunate in having these outstanding archeologists in our group. Dr. Robert Ritzenthaler, Curator of Anthropology at the Milwaukee Public Museum, is another outstanding archeologist who has been unable to take part in any of the above mentioned activities due to a year's absence in Africa and Europe.

Many of us were present at some of the sites while they were being worked and were happy to be permitted to assist. Upon a recent trip to Kentucky, where we went to visit Mr. Tom Hazelwood, a Past-President of the Kentucky Archeological Society, we discussed problems confronting the amateur archeologist. Mr. Hazelwood's greatest problem seemed to be the influx of fraudulent artifacts during the past year and the necessity of fighting it.

From Kentucky we drove to Knoxville, Tennessee, to visit Dr. Tom Lewis who is the Curator of Anthropology at the University of Tennessee. Dr. Lewis showed us the plans for their new museum and also their outstanding collection of Duck River artifacts. The discussion again turned to fraudulent artifacts and to the responsibilities of members of the various State Archeological Societies. In one of the Tennessee Archeological Society Newsletters, Dr. John N. Nuckoll, the current President of the Tennessee Society wrote an article which bears repetition. The letter content is as follows:

On Attaining Respectability

The Tennessee Archeological Society is made up of over four hundred people of all ages from many walks of life. Few

of us have the same ideas about archeology or what we expect from it. There are collectors, surface hunters, excavators and some who are satisfied to attend meetings and read about the subject. There are some amateurs who approach professional status and have made important contributions to archeology. Members of our Society have made some important discoveries such as Russell Cave. In spite of these differences, however, the great majority, no doubt, put selfish interests secondary to the progress of the science of archeology. This attitude is a commendable one and doubtless contributes to the excellent leadership that we have among our professional group. The relationship between the professional and amateur is a cordial one and the two combine to make a co-operative and productive organization that I have come to realize commands the respect of both professional and amateur archeologists not only in our neighboring states but elsewhere.

Unfortunately there is another side of the coin. Apparently there are those (not necessarily members of the T. A. S.) whose selfish interests have overshadowed the common good and the progress of a fascinating and important science. They have chosen to ignore the fact that our professional people are a highly trained and capable group of dedicated individuals who have a mission to perform, and who work under the triple handicap of a lack of funds, too short a season in which to work out of doors, and the constant erosion and destruction of archeological sites. Add to this the political indifference and you have a truly discouraging situation. These handicaps are bad enough, but our archeologists just cannot afford to waste time on sites that have been spoiled by the pot-hunter or despoiled by dishonest people.

After the splendid talk by Dr. Black at the Clarksville meeting I doubt that any of our group who heard him would go into a mound or burial ground of potential importance without at least professional supervision — but **somebody** did! The dig was spoiled and the information that might have been obtained from it was lost for all time. Moreover, I do not think for a minute that any of our crowd would steal — not from the University of Tennessee! But somebody bought artifacts that **were stolen** from an important dig carried on by the University of Tennessee this past summer. I am not prepared to say just how guilty that person was because there may be extenuating circumstances — I would rather not judge — but the effect was the same and this is the thing that each one of us should think about before buying relics of any kind. I am inclined to believe that there is a place for the conscientious collector, but I also believe that his responsibility is great. There is some threat in neighboring states to legislate against

amateur participation in archeological pursuits. It could happen to Tennessee, of course, if the situation should get out of hand.

Dr. John B. Nuckoll,
President, T. A. S.

* * *

Dr. Nuckoll has just recently presented to the University of Tennessee his collection of early lithic specimens gathered by him personally from a single site during the past five years. Close to one thousand pieces were included.

* * *

I know we are all in agreement with the fact that the Wisconsin Archeological Society exists 'For the purpose of advancing the study and preservation of Wisconsin Indian Antiquities", and I know that our members agree whole-heartedly with this principle. It is with this understanding that we are able to receive state financial support for our Society.

I hope all of our members will give this matter their serious thought and consideration.

* * *

It is with deep regret that we say good-by to Dr. Warren Wittry who has acepted a new position and has left the State of Wisconsin. We deeply appreciate all of the work he has done and the assistance he has given to our Society. I am sure Dr. Wittry will not mind this quote from his letter to me: "I have accepted the position of Curator of Anthropology at the Illinois State Museum at Springfield. I have done this with much sadness, as I have grown to love Wisconsin archeology and feel that there are many problems still to be worked out. Although I will not be as intimately concerned with the Wisconsin area, I will be much interested in future discoveries and the activities of the Society. In prehistoric times there were no such things as State lines and in the modern study of archeology they must be ignored. Thus, my move to a sister state is really not such a big one."

Dr. Wittry leaves with all good wishes from the Wisconsin Archeologlical Society for his continued success in his chosen profession.

Phillip H. Wiegand

COMMITTEES

Current

ARCHEOLOGICAL CONSERVATION — Dr. David A. Baerreis, Chairman. Edwin Goke, Paul Scholz, Chandler W. Rowe, Laurence Kracht.

MEMBERSHIP—Phil Wiegand, Chairman. Mrs. Theodore Koerner, Herman Zander.

PUBLICITY—Dr. E. G. Bruder, Chairman. Robert Ritzenthaler.

FRAUDULENT ARTIFACTS—J. Ringesisen, Jr., Chairman. W. C. McKern, J. K. Whaley, Paul Scholz.

SURVEYING AND CODIFICATION — Kermit Freckmann, Chairman. W. C. McKern, Ed Eichenberger, Howard Van Langen, Louis Pierron, Lincoln Smith, Warren Wittry (Madison Representative.

EDITORIAL—Robert Ritzenthaler, Chairman, Arthur Niehoff.

PROGRAM—E. G. Bruder, Chairman. Arthur Niehoff, Herman Zander.

Standing

LAPHAM RESEARCH MEDAL—Dr. S. A. Barrett, Chairman. H. W. Cornell, Dr. H. W. Kuhm, W. C. McKern, Charles Schoewe.

WISCONSIN
ARCHEOLOGICAL SOCIETY